Second Year B. Tech. of the Four – Year Integrated Degree Course Examination, 2015-16
(CIVIL ENGINEERING)

SEMESTER- I

PRINCIPLES OF OBJECT ORIENTED PROGRAMMING

TIME: THREE HOURS

Maximum Marks: 50

"Do not write anything on question paper except Roll Number otherwise it shall be deemed as an act of indulging in use of Unfair-means and action taken as per rules".

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(iii) Attempt at least one question from each unit.
(iv)   Answer should be to the point.
(v)   All questions carry equal marks.

UNIT – I

Q.1   What is Object Oriented Programming? How it is different from the Procedure Oriented Programming?   (10)

Q.2   Define the following term
(a)   Object and classes
(b)   Public, Private and Protected Member   (10)

UNIT – II

Q.3 (a) Write a Programme that will ask for temperature in Fahrenheit and display it in Celsius using object –oriented concept. (5)

(b) Which operator are used for the Input and output in C++; Explain with example. (5)

Q.4 (a) What is the main advantage of passing argument by references? (5)

(b) Explain call by value and call by reference with suitable example. (5)

UNIT – III

Q.5 (a) What is Inline function? Describe with suitable example. (5)

(b) Explain Friend function with suitable example. (5)

Q.6 (a) How do we achieve function overloading on what basis the compiler distinguish between a set of overloaded function having the same name. (5)

(b) What is constructor? Is it mandatory to use constructor in a class? (5)

UNIT – IV

Q.7 Explain multiple and multilevel inheritance with complete example. (10)

Q.8 (a) How pointers of objects are created. Explain their need. (5)

(b) How do the properties of the following two derived class differ?
(i) Class D1: Private B {/ /...};
(ii) Class D2: Public B {/....}; (5)

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B.Tech. (II Yr.)

Total Pages : 4

Roll No. ....

Course No. : EC-217

M–V/251

Second Year B.Tech. of the Four Year Integrated Degree Course Examination, 2015-16

(Electronic & communication Engineering)

SEMESTER-I

ELECTRONIC MEASUREMENT & INSTRUMENTATION

Time : Three Hours

Maximum Marks : 50

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(v) All questions carry equal marks.

(vi) Assume suitable data, if necessary and indicate the same clearly.

P. T. O.

UNIT–I

1. (a) Define the term Accuracy and Precision with respect to measuring instrument. A 0-150 voltmeter has a guaranteed accuracy of 1% full scale reading. The voltage measured by the instrument is 83 V. Calculate the limiting error in percent. 2+3

   (b) The accuracy of five digital voltmeters are checked by using each of them to measure a standard 1.000 V from a Calibration instrument. The voltmeter readings are $V_1 = 1.001$ V, $V_2 = 1.002$ V, $V_3 = 0.999$ V, $V_4 = 0.998$ V, $V_5 = 1.00$ V. Calculate the Standard deviation and the probable measurement error for the group of measuring instruments.

2. (a) Enlist different types of measurement errors. Calculate the maximum percentage error in the sum of two voltage measurements, when $V_1 = 100V \pm 1\%$ and $V_2 = 80$ V $\pm 5\%$. 2+3

   (b) What do you mean by Systematic errors? What are the causes of systematic error and how it can be minimized?

UNIT–II

3. (a) Explain the working of single phase Electro dynamometer power factor meter with suitable diagram.

4.

5.

6.

7.

(b) Write a short note on ramp type DVM.　　5

4. (a) Enlist different types of frequency meters. Explain any one of them in detail.　　5

(b) Explain the operation of Transistor voltmeter circuit.　　5

UNIT–III

5. (a) Define the term Gauge Factor. Explain the working of a strain gauge with suitable bridge circuit.　　5

(b) Explain the working of a general purpose spectrum analyzer with block diagram.　　5

6. (a) Explain the working of Linear Varible differential transformer for the measurement of displacement with neat sketches.　　5

(b) What is the difference between Sensor and a Transducer? Enlist the various components involved in a typical measurement system.
　　　　　　　　　　　　　　　2+3=5

UNIT–IV

7. (a) Give an overview of different digital display devices.　　5

(b) Explain the functioning of a basic strip chart recorder.　　5

P.T.O.

M–V/251/I/2015-16/**60**/ZZ/138　　3

8. (a) Draw the typical block diagram of a Telemetry system. Explain frequency division (multiplexing) based Telemetry method. 2+3=

   (b) Write a short note on LCD display.

B.Tech. (E & C) II Yr.

Total Pages : 4

Roll No. ....

Course No. : CS-213 (EC)

M–V/180

Second Year B.Tech. of the Four Year Integrated Degree Course Examination, 2015-16
(ELECTRONICS & COMMUNICATION ENGINEERING)

SEMESTER-I

OBJECT ORIENTED PROGRAMMING WITH C++

Time : Three Hours

Maximum Marks : 50

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P. T. O.

UNIT-I

1. (a) How is a member function of Class defined? Write a program in C++ that use object as function arguments and performs the addition of time in hour and minutes format. 5

   (b) What is static data member? What are its properties? Write a program in C++ that show use of a static data member. 5

2. (a) What do you mean by Dynamic binding and message passing? Write some of situations where inline expanssion may not work. Also write advantages of passing arguments by reference. 5

   (b) What do you mean by function prototype? Write a program in C++ using class and object to find volume of box that has its sides w. h. d. means width, height and depth and also find the surface area given by formulae $S = 2[wh + hd + dw]$. 5

UNIT-II

3. (a) What do you mean by Dynamic initialization of object? Also list some of special properties of constructor function. 5

   (b) Write a program in C++ using :

   (i) Default constructor

   (ii) Arguments constructor

(iii) Copy constructor.

To find area of rectanle using formula area = length * breadth. 5

4. (a) What are restrictions and limitations in operator overloading? Write a program in C++ that show overloading of input and output operator >> and << using friend function. 5

(b) Write a program that creates a linked list object of 10 characters and creates a second list object containing a copy of the first list but in reverse order. 5

UNIT-III

5. (a) What does Polymorphism? How is polymorphism achieved at Compile time and Run time. 5

(b) What is difference between overloading and overriding of member functions? Also explain function overriding with suitable example. 5

6. (a) Explain virtual function, virtual base class and pure virtual function with suitable programming example. 5

(b) Explain following with suitable example :

(i) Inheritance

(ii) This pointer. 5

UNIT-IV

7. (a) What is Generic programming? Explain class templates and function templates with suitable example. 5

   (b) What is difference between opening a file with constructor function and opening a file with open( ) function? Also write a program in C++ that reads a text file one line at a time and display each line on screen, use getline ( ). 5

8. (a) Explain various file mode options available with suitable example. Also describe various classes available for file operation. 5

   (b) Write a program in C++ that show overloading of cin and cout operators. 5

M-V/184

Second Year B.Tech. of the Four Year Integrated
Degree Course Examination, 2015-16
(COMPUTER SCIENCE ENGINEERING)

SEMESTER-I

PRINCIPLES OF PROGRAMMING LANGUAGES

Time : Three Hours

Maximum Marks : 50

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P. T. O.

UNIT-I

1. (a) What do you mean by programming paradigm? Explain different programming paradigm with example. 8

   (b) What is a virtual computer? How can you design a virtual computer? Explain in detail. 8

2. (a) Describe following properties :

      (i) Orthogonality

      (ii) Reliability.

   (b) Distinguish between Static binding and Dynamic binding. 4

   (c) What is binding? Give examples of various bindings and binding time for the statement : 4

      (i) int a;

      (ii) a=a-1.

UNIT-II

3. (a) Explain representation and implementation of following data types :

      (i) Integer Data Types

      (ii) Real Data Type.

   (b) What is type equivalence? Explain its variations with example.

   (c) What is type checking and type coercion?

4. (a) Describe the implementation and specification of sequential and direct access file with suitable example. 8

   (b) (i) What is variant record? Give syntax to declare variant record. 4

   (ii) Distinguish between static type checking and dynamic type checking. 4

UNIT–III

5. Explain the following with suitable examples : 16

   (a) Abstract Data Type

   (b) Encapsulation

   (c) Information Hiding

   (d) Garbage Collection.

6. (a) Define Exception and exception handling with suitable example. 8

   (b) What is inheritance? Explain its types with example. 8

UNIT–IV

7. (a) What do you mean by structured sequence control? Also discuss the problems in structural sequence control. 6

   (b) Differentiate between : 10

   (i) Impilict and Explicit Sequence Control

   (ii) Substitution and Unification.

P.T.O.

8. (a) What is the role of parameter passing in subprogram invocation? Explain the difference between call by value and call by reference. 6

(b) What is scope, lifetime and visibility and visibility of a variable, compare local, non-local and global reference environment. 6

(c) Differentiate between stack and heap based storage management. 4

B. Tech. (CSE) (II Yr.)

Second Year B. Tech. of the Four – Year Integrated
Degree Course Examination, 2015-16
(COMPUTER SCIENCE ENGINEERING)

SEMESTER- I

OBJECT ORIENTED PROGRAMMING WITH C++

TIME: THREE HOURS

Maximum Marks: 50

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UNIT – I

Q.1 (a) What is the use of Pre processor Directive? Explain with example? (5)

     (b) What is the use of inline function? Give code segment which shows the use of inline function? (5)

Q.2 (a) Define automatic, external, static variable in C++ (5)

     (b) Write a C++ program to print largest even and largest odd number from a list of numbers entered through user. The list terminates as soon as one enters 0. (5)

UNIT – II

Q.3 **(a)** What is the difference between calling methods for constructors and destructors? (5)

(b) Write a C++ programme to create an array of string. Read and display the string using constructor and destructor. Do not use member function. (5)

Q.4 **(a)** List the difference between operator overloading and function overloading? (5)

(b) Write a C++ program to create dynamically an array of object of class type. Use new operator ? (5)

UNIT – III

Q.5 **(a)** What is Dynamic binding? How it is perform? (3)

(b) Write C++ code to declare classes A, B and C. Each class contains one character array as a data member. Apply multiple inheritance. Concatenate a string of classes A and B and store it the class C. show all three stings. (7)

Q.6 **(a)** Explain the use of Friend function? (5)

(b) What is Overriding member function? Explain. (5)

UNIT – IV

Q.7 **(a)** Write a program is C++ to write the contents of one file in reverse order into another file. (5)

(b) Explain various file mode exist in C++. (5)

Q.8 **(a)** What is template class. How we can create linked list using template class. (5)

(b) Write short note on following: (5)

(i) Standard Template Library

(ii) Stream errors

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B. Tech. (CSE) (II Yr.)

Second Year B. Tech. of the Four – Year Integrated Degree Course Examination, 2015-16
(COMPUTER SCIENCE ENGINEERING)

SEMESTER- I

DIGITAL LOGIC DESIGN

TIME: THREE HOURS

Maximum Marks: 50

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(v)   All questions carry equal marks.

Q.1   (a)   Convert the following binary numbers to gray codes   (5)

   (i) 10110   (ii) 1110111   (iii) 101010001

   (iv) 101011101   (v) 11011011

      (b)   Express the following excess-3 codes as decimals   (5)

   (i) 0110 1011 1100 0111   (ii) 0011 0101 1010 0100

   (iii) 0100 1000 1001   (iv) 1001 0111 1100

   (v) 1100 1010 0011

Q.2 (a) Draw the suitable diagram of basic DTL NAND gate and explain the terms propagation delay, Fan-out, Fan-In and Noise Immunity (5)

(b) Draw the circuit diagram of a TTL inverter and explain the operations (5)

(5)

Q.3 (a) Simplify the given Boolean expression

$Y = \overline{\overline{A\overline{B} + ABC} + A(B + A\overline{B})}$ (5)

(b) Show that $(A+B)(\overline{A}\overline{C}+C)\overline{(\overline{B}+AC)} = \overline{A}B$ (6)

Q.4 (a) Simplify the expression

$Y = \pi (0, 1, 4, 5, 6, 8, 9, 12, 13, 14)$

Using K-map method (4)

(b) Simplify the following using K-map method

$Y = \sum (0, 2, 3, 6, 7, 8, 10, 11, 12, 15)$

Q.5 (a) Design a full subtractor with the help of truth table and draw the logic diagram on the basis of k-map simplification. (6)

(b) Define the multiplexer and draw the suitable logic diagram of 4 to 1 multiplexer (4)

Q.6 (a) Design a 3 to 8 bit decoder with the help of truth table and draw the suitable logic diagram (5)

(b) With help of truth table design an octal to binary encoder and draw the logic diagram. (5)

Q.7 Design a 4 bit magnitude comparator considering the following steps:

(i) Draw the truth table

(ii) Write down the logic equations

(iii) Draw the suitable logic diagram of 4 bit magnitude comparator (10)

Q.8 (a) Design the D-flip-flop using NAND gates. Draw the state diagram and write down the characteristics equation of D flip flop. (5)

(b) Draw the suitable diagram of edge-triggered J-K flip-flop with truth table. Explain the edge triggering in flip-flop

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B. Tech. (EE/CSE/IT) (II Yr.)

Second Year B. Tech. of the Four – Year Integrated Degree Course Examination, 2015-16

(COMPUTER SCIENCE AND ENGINEERING/ELECTRICAL/INFORMATION TECHNOLOGY)

SEMESTER- I
ELECTRICAL MEASUREMENTS & INSTRUMENTS
(Common For Electrical , Computer Science and Engineering, Information Technology)

TIME: THREE HOURS

Maximum Marks: 50

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UNIT – I

Q.1   (a)   Describe construction and working of a ballistic galvanometer. Explain the difference in construction details of a ballistic galvanometer and a D'Arsonval galvanometer.   (5)

(b)   Explain in detail about induction instruments for the measurement of current and power.   (5)

Q.2   (a)   Explain in detail about principle of operation of measuring instruments and also explain in brief about shape of scale and its effect on instruments.   (6)

(b)   Calculate the ratio of sensitivity for fundamental to that for third harmonic for a vibration galvanometer tuned to a frequency of 50Hz. Data of galvanometer is given as: (4)

Intertia constant => 10×10^{-3} kg $-m^2$;

Damping constant => 25×10^{-3} N-m/rad $-S^{-1}$.

UNIT – II

Q.3 **(a)** Describe the construction & working of a co-ordinate type a.c. potentiometer. How is it standardized and also explain how an unknown voltage can be measured with it. (5)

(b) What are the different problems associated with measurement of low resistances? Explain the principle of working a Kelvins Double – Bridge and explain how the effect of contact resistance and resistance of leads is eliminated. (5)

Q.4 **(a)** Classify the resistances from the point of view of measurements. Describe in brief the different methods used for measurement of medium resistances. (5)

(b) Explain the reasons why d.c. potentiometer cannot be used for a.c. measurements straightway. Explain the modification that are needed in a d.c. potentiometer to be used for a.c. application. (5)

UNIT – III

Q.5 **(a)** Derive the general equations for balance for an a.c. bridge. Prove that two conditions i.e. for magnitude and phase have to be satisfied if an a.c. bridge is to be balanced unlike a d.c. bridge wherein only the magnitude condition is to be satisfied. (6)

(b) Explain briefly, the methods for testing current transformer. (4)

Q.6 **(a)** What is the difference between current transformer and potential transformers? Explain with the help of neat diagram the construction of potential transformer. . (6)

(b) An inductance of 0.22H and 20 Ω resistance is measured by comparison with a fixed standard inductance of 0.1H and 40 Ω resistance. They are connected as shown in Figure. The unknown inductance is in arm a b and the standard inductance is in arm b c, a resistance of 750Ω is connected in arm cd and a resistance whose amount is not known is in arm da. Find the resistance of arm da and show any necessary and practical additions required to achieve both resistive and inductive balance. (4)
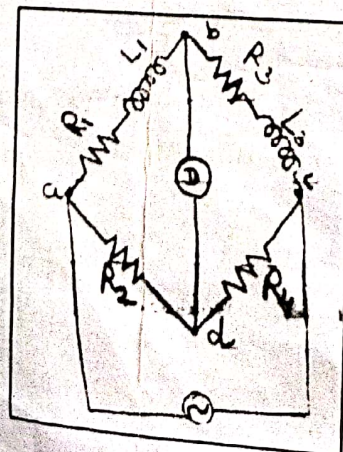
UNIT – IV

Q.7 (a) Explain ramp type digital voltmeter with the help of neat and clean diagram. (5)

(b) Explain in briefly about testing of ring specimens. Also describe the method for determination of B – H curve of a magnet material. (5)

Q.8 (a) Discuss a scheme for measurement of voltage digitally based on voltage to frequency conversion. (5)

(b) What is a wave analyzer? Explain frequency selective wave analyzer with the help of block diagram.

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B. Tech. (CSE/IT) (II Yr.)

Second Year B. Tech. of the Four – Year Integrated
Degree Course Examination, 2015-16
(COMPUTER SCIENCE ENGINEERING & INFORMATION TECHNOLOGY)

SEMESTER- I

ANALOG ELECTRONICS

TIME: THREE HOURS

Maximum Marks: 50

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        clearly.

UNIT – I

Q.1   Discuss the following in an amplifier
(a)   Biasing
   (2x5=10)
(b)   Frequency and phase response

Q.2   Given the following transistor measurements made at room temperature

I_c=5mA, V_{CE}=10V and h_{fe}=100, h_{ie}=600Ω, $|A_{ie}|$=10 at 10MHz, C_c=3pF, Find f_B, f_T, C_e, r'_{be} and r'_{bb}.
                                                                        (2+2+2+2+2=10)

UNIT – II

Q.3 (a) An amplifier has a voltage gain of 40. The amplifier is now modified to provide a 10% negative feedback in series with input. Calculate:

(i) Voltage gain with feedback (ii) Amount of feedback in dB (iii) Loop gain

(2+2+2=6)

(b) Define stability criteria of feedback amplifier.

(4)

Q.4 Calculate the voltage gain with and without feedback for the circuit given in (Figure.4) with values gm=5mA/V, R_D=5.1kΩ, R_S=1kΩ, R_f=20kΩ, r_d=1MΩ

(5+5=10)

Figure (4)
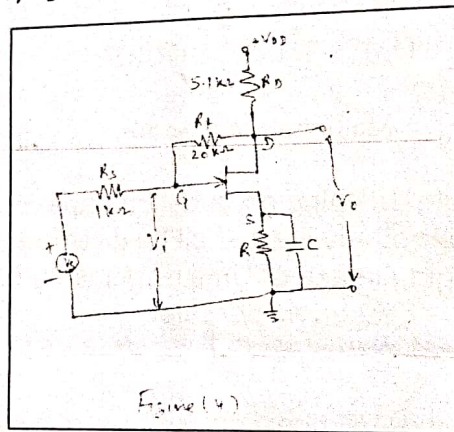
UNIT – III

Q.5 Signal power is to be delivered to a loudspeaker having a resistance of 4 Ω. The output transformer used in the power amplifier has a turn ratio of 20:1. The primary winding of transformer gets a.c. signal from a transistor which can be represented by a current source of 5mA and shunt resistance of 8kΩ. Calculate the power delivered to loudspeaker when it is connected to the secondary of the transformer.

(10)

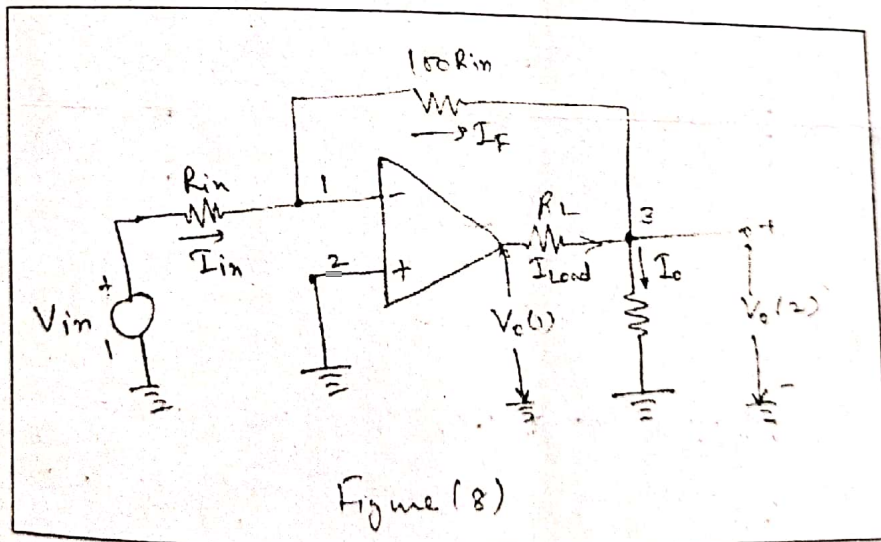Q.6 (a) What is tuned voltage amplifier?

(3)

(b) The signal tuned amplifier circuit consist of tuned circuit having R=5Ω, L=10mH and C=0.1µF. Determine the (i) resonant frequency (ii) Q-factor of the tank circuit and (iii) bandwidth of the amplifier.

(3+2+2=7)

UNIT – IV

Q7. Prove that the ratio of parallel to series resonant frequency of crystal oscillator is given approximately by

$$\frac{f_p}{f_s} \approx \left(1 + \frac{C}{2C'}\right) \quad \text{where } C' = \text{mounting capacitance}$$

If $C = 0.04pF$ and $C' = 2pF$, by what % is the parallel resonant frequency greater than the series resonant frequency?

(7+3=10)

Q8. (a) Discuss the important practical characteristics of operational amplifier. (4)

(b) The operational amplifier is shown in (Figure 8)

(i) Determine the expression for voltage $V_0(1)$

(ii) Calculate the load resistance I load in terms of input voltage, V_{in} and resistance R_{in}.

(3+3=6)

Figure (8)

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