QP-237

Total No. of Pages : 3

MAR-APR-2024 SUMMER EXAMINATION
B.Tech. CBCS
Sub. Name: Controls and Instrumentation
Sub. Code: 91976

Day and Date: MAY ,09-05-2024   **Total Marks: 70**
Time: 02:30 PM To 05:00 PM

Instructions: 1. Assume suitable data wherever necessary and mention it boldly
2. Draw neat labbelet diagrams wherever necessary
3. Figures to the right indicate full marks
4. Use of Scientific calculator is allowed

Special Inst.:   1. Q.1 is compulsory.
2. Solve any 4 questions from remaining questions.

Q1)   Solve following MCQ.   **[10]**

   i.   Find the number of asymptotes for the given open-loop transfer function of a unity feedback system: $G(s) = ((s + 2) (s+3) (s + 4)) / ((s + 5) (s+6) (s + 1))$
   A. 1
   B. 0
   C. 2
   D. 3

   ii.   The overall transfer function of two blocks in series are :
   A. sum of the individual gain
   B. Product of individual gain
   C. Difference of individual gain
   D. Division of individual gain

   iii.   When the period of the observation is large, the type of the error will be:
   A. Transient error
   B. Steady State error
   C. Half-power error
   D. Position error constant

   iv.   Frequency range of bode magnitude and phases are decided by
   A. The lowest and higher important frequencies of dominant factors of the OLTF
   B. The lowest and highest important frequencies of all the factors of the open loop transfer function
   C. Resonant frequencies of the second factors
   D. None of the above

v. In closed loop control system, what is the sensitivity of the gain of the overall system, M to the variation in G?
A. G/1+GH
B. 1/1+GH
C. G/1+G
D. 1/1+G

vi. The characteristic equation of a control system is given by s(s+4)(s2+2s+s) + k(s+1) = 0. What are the angles of the asymptotes for the root loci?
A. 0°, 180°, 300°
B. 0°, 120°, 240°
C. 60°, 180°, 300°
D. 120°, 180°, 240°

vii. Which of the following is a type of resistive sensor?
A. Thermocouple
B. Strain gauge
C. Hall effect sensor
D. Optical Sensor

viii. *The function of data acquisition system is*
A. acquiring physical phenomena from the real world
B. sending signal to real world
C. processing and analysing of signal
D. all of the above

ix. Which of the following is not the component of a SCADA system?
A. Database server
B. I/O system
C. PLC controller
D. Sparger controller

x. Radio telemetry is useful when source and receiver is at
A. Long distance separation
B. Short distance separation
C. Varying separation distance
D. All of the mentioned

Q2) a) Explain signal flow graph in detail with the help of Mason gain formula. [07] [15]
b) Obtain the transfer function of given circuit diagram. [08]

[2]

P.T.O.
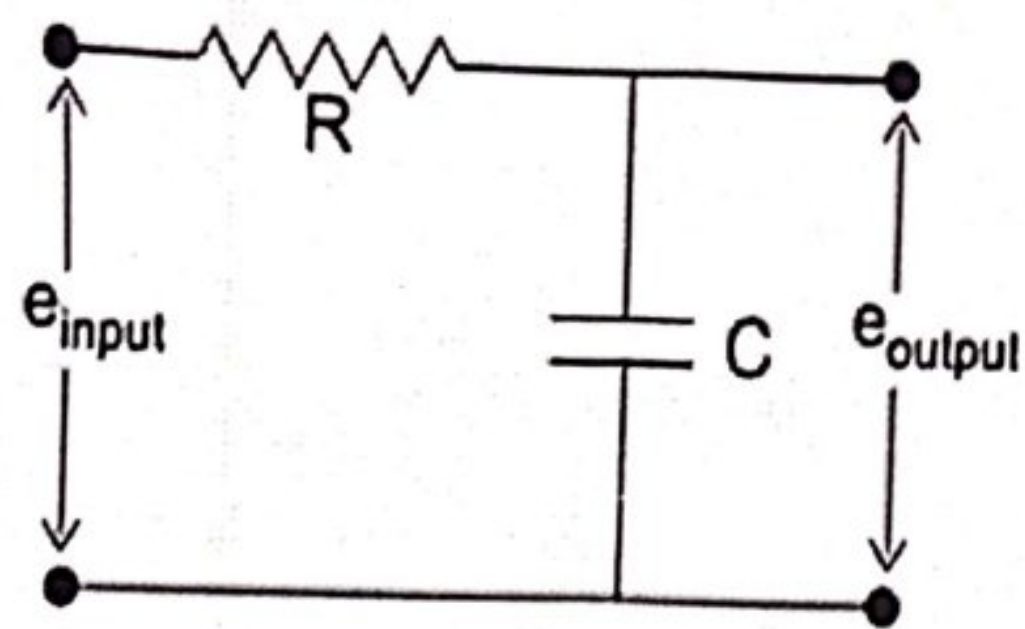
Q3) a) What is root locus & state the steps for root locus. [7] [1

b) Obtain the rise time, peak time, maximum peak overshoot and settling time of unit step response of closed loop system given by, [8]

$C(s) / R(s) = 1/(S2+S+1)$

Q4) a) What is telemetry and explain landline telemetry in detail. [7] [1

b) For given system having open loop transfer function of $G(s)H(s) = 10 / s (s+1) (s+10)$ then determine the stability using bode plot. [8]

Q5) a) What are selection criteria of transducers. [7] [1

b) Explain the construction and working of LVDT. [8]

Q6) a) Draw the block diagram of instrumentation system and explain its blocks. [7] [15

b) What is data logger. Explain types of it detail. [8]

* * *

[3]

MAR-APR-2024 SUMMER EXAMINATION
B.Tech. CBCS
Sub. Name: Computer Network
Sub. Code: 91977

Day and Date: MAY ,11-05-2024

Total Marks:

Time: 02:30 PM To 05:00 PM

Instructions: 1. Assume suitable data wherever necessary and mention it boldly
2. Draw neat labbelet diagrams wherever necessary
3. Figures to the right indicate full marks
4. Use of Scientific calculator is allowed

Special Inst.: 1) Q.1 is compulsory.
2) Solve any 4 questions from remaining questions

Q1) Solve following MCQ. [10

i. When a collection of various computers appears as a single coherent system to its clients, what is this called
   A. mail system
   B. networking system
   C. computer network
   D. distributed system

ii. IPv6 supports which auto-configuration mode of its host devices.
   A. Stateful mode
   B. Stateless mode
   C. Both
   D. None of above

iii. ICMPv6 stands for _____.
   A. Intranet Controller Model Protocol version 6
   B. Internet Controller Message Protocol version 6
   C. Internet Control Model Protocol version 6
   D. Internet Control Message Protocol version 6

iv. DHCP (dynamic host configuration protocol) provides _____ to the client
   A. IP address
   B. MAC address
   C. Url
   D. None of the mentioned

v. IP assigned for a client by DHCP server is
   A. for a limited period

  B. for an unlimited period

  C. not time dependent

  D. none of the mentioned

vi. In FTP, the well-known port _____ is used for the control connection and the well-known port _____ for the data connection.

  A. 21; 22

  B. 21; 20

  C. 20; 21

  D. none of the above

vii. TELNET is a _____ client-server application program.

  A. specific-purpose

  B. general-purpose

    C. both a and b

  D. none of the above

viii. The formal protocol that defines the MTA client and server in the Internet is called _____

  A. SMTP

  B. SNMP

  C. TELNET

  D. none of the above

ix. E-mail is _____

  A. Loss-tolerant application

  B. Bandwidth-sensitive application

  C. Elastic application

  D. None of the mentioned

x. Multimedia is also used for ___ communications and presentations.

  A. Corporate

  B. Company

  C. Communal

  D. Commercial

Q2)   a) Explain OSI model in detail with neat diagram.   **[7]**

    b) What are the various design used for DLL? Explain in detail.   **[8]**

Q3)   a) Explain multiple access protocol ALOHA.   **[7]**

    b) explain the following networking devices in deatail   **[8]**

      1.Switch.   2.Router.

      3. Bridge.   4.gateway.

5.Reapeater   6.Hub

Q4) **a)** write a short note on.   [8]
         1.IPV4 addressing
         2.IPV6 addressing
         3. routing table

b) Define network layer. what are the responsibilities of network layer.   **[7]**

Q5)   **a)** Explain stop and wait protocol.   **[7]**
      b) Explain with neat diagram IP datagram format.   **[8]**

Q6)   **a)** explain UDP and TCP.   **[7]**
      b) Explain duties of transport layer   **[8]**

* * *

MAR-APR-2024 SUMMER EXAMINATION
B.Tech. CBCS
Sub. Name: Discrete Structures and Automata Theory
Sub. Code: 91979

Day and Date: MAY ,15-05-2024   **Total Mark**
Time: 02:30 PM To 05:00 PM

Instructions: 1. Draw neat labbelet diagrams wherever necessary
              2. Figures to the right indicate full marks
              3. Use of Scientific calculator is allowed

Special Inst.: 1. Q. 1 is compulsory.
              2. Solve any 4 questions from remaining questions.

Q1) Solve following MCQ.   [

   i. If set has n number of elements then the total number of subsets will be …..
      A. n2
      B. 2 rest to n
      C. 2n
      D. n/2

   ii. The statement $p \vee \neg(p \wedge q)$ is
      A. Tautology
      B. Contradiction
      C. Equivalent
      D. None of these

   iii. The relation ≤ (subset) of set inclusion is a example for
      A. Equivalence relation
      B. Universal relation
      C. Partially ordered relation
      D. Identity relation

   iv. If for every $x \in X$,$(x,x) \notin R$ this relation is
      A. Reflexive
      B. Asymmetric
      C. Empty
      D. Irreflexive

   v. The edges of …… graph are bidirectional.
      A. Directed graph
      B. Cycle graph
      C. Null graph

D. Undirected graph

vi. There are _____ tuples in finite state machine.
   A. 4
   B. 5
   C. 6
   D. Unlimited

vii. Languages of a automata is

   A. If it is accepted by automata
   B. If it halts
   C. If automata touch final state in its life time
   D. All language are language of automata

viii. Regular expressions are closed under
   A. Union
   B. Intersection
   C. Kleen star
   D. All of the mentioned

ix. Regular expression are
   A. Type 0 language
   B. Type 1 language
   C. Type 2 language
   D. Type 3 language

x. Push down automata accepts _____ languages
   A. Type 3
   B. Type 2
   C. Type 1
   D. Type 0

Q2) A. Suppose 50 science students are polled to see whether or not they have studied [
      hindi (H) or Sanskrit (S) yielding the following data
      25 studied (H)   07 M
      20 studied (S)
      5 studied both

   Find the number of students who

   a. Studied only hindi

   b. Did not study Sanskrit

   c. Studied hindi or Sanskrit

   d. Studied neither language

[2]

B. Prove that $(p \rightarrow r)^{\vee}(q \rightarrow r)$ is logically equivalent to $(p^{\wedge}q) \rightarrow r$.

08 M

Q3) A) Let R denotes a relation on the set of pairs of positive N×N integers such that [15] $(x,y)R(u,v)$ iff $xv = yu$. Show that R is an equivalence relation.

07 M

B) Define a Posert & draw a Hasse diagram for the poset $R=(X, /)$ for divisibility on set $X=\{2,3,4,6,8,12\}$

08 M

[15]

Q4) A. State and explain closure properties of regular language.

B. Define Eulerian & Hamiltonian graph. Classify the following graphs into Eulerian & Hamiltonian & explain why it is so.

G1   G2

[15]
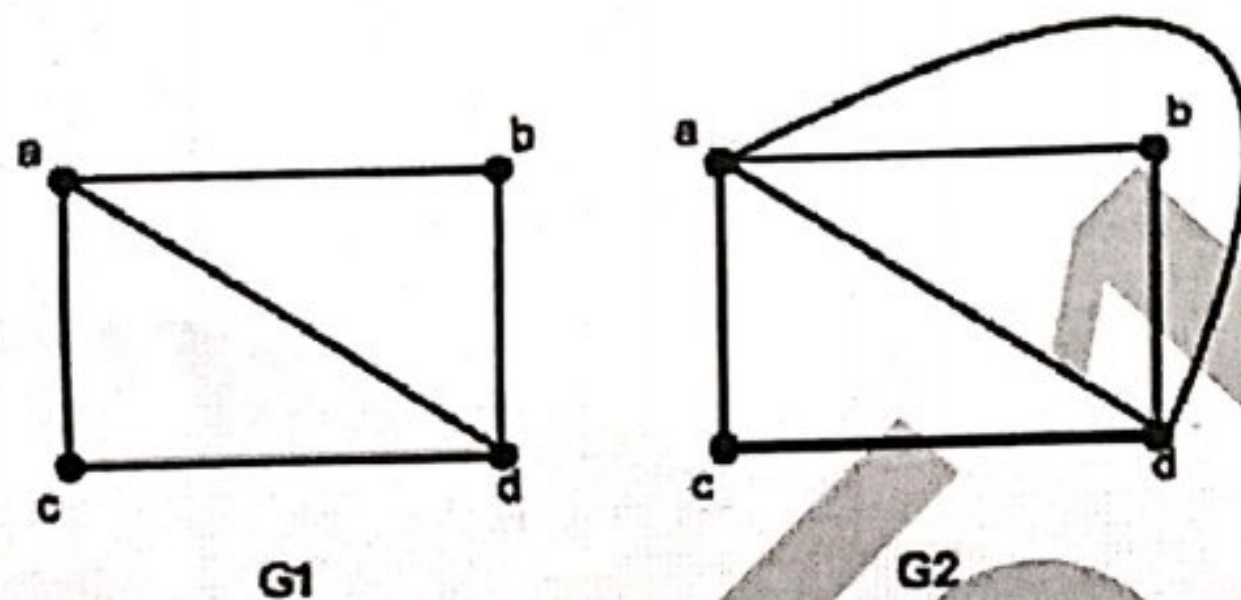
Q5) A) Describe Moore & Mealy machine with all tuples in details.

07 M

B) Design DFA to accept strings over the alphabet $\Sigma = \{a,b\}$ containing even number of a's.   08 M

[15

Q6) A) Find the CFG for regular expression $(11)*(010+01)*$

07 M

B) Define the structure of PDA. Explain the powers and limitations of PDA.

08 M

* * *

[3]

March-April 2024 Examination
B.Sc. (CBCS) Environmental Studies

पर्यावरण अभ्यास

Subject Code: 94282/ 84775/ 79089/ 79118

Day and Date : Sunday, 05-05-2024
Time : 10:30 am to 01:30 pm

Total Marks : 70

Q.1 Multiple Choice Question   [1 x 10 mark]

1. A poisonous gas given out of a vehicle exhaust is..........

   a) Methane   b) Ethane

   c) Carbon dioxide   d) Carbon monoxide

2. The ozone layer is becoming thin due to the gas...........

   a) CO   b) CFCS

   c) CO_2 d) NO_2

3. "El Nino' this Phenomenon is associated with ....

   a) Climate change   b) Air pollution

   c) Water Pollution   d) Radiation effect

4. "Smog' is a mixture of ....

   a) Dust and gas   b) Smoke and dust

   c) Snow and fog   d) Smoke and fog

1

5. Environmental studies discipline has .... scope.

   a) Multiple and multilevel

   b) Unilateral

   c) Important

   d) Natural

6. The Environment (Protection) Act, 1986 was enacted for the............ of environment.

   a) Protection and improvement

   b) Law and enforcement

   c) Management and economy

   d) Health and regulation

7. The primary producers in a forest ecosystem are ....

   a) Bacteria and other micro-organism

   b) Carnivores

   c) Herbivores

   d) Chlorophyll containing trees and plants

8. Acid rain happens due to reaction ofin atmosphere

   a) Atmospheric water and carbon monoxide

   b) Sulphur oxides and atmospheric water

   c) Sulphuric acid and carbon dioxide

   d) Nitrogen oxide and oxygen

9. Noise is measured using sound meter and the unit is ....

    a) Hertz   b) Kilogram

    c) Joule   d) Decibel

10. The order of basic processes involved in succession is--

    a) Nudation ->stabilization-> competition and co action ->Invasion->reaction

    b) Nudation ->Invasion-> competition and co action reaction->stabilization

    c) Invasion Nudation ->competition and co action ->Reaction->stabilization

    d) Invasion stabilization competition and co action->Reaction>nudation

Q.2 Answer any three from following   **(3 x 5marks)**

Q.1 Describe the structure of pond ecosystem,

Q.2 Define deforestation and list causes of deforestation.

Q.3 Define soil erosion and list the causes.

Q.4 Explain genetic, species and ecosystem diversity with examples.

Q.5 What are the causes of marine pollution?

Q.3 Write Short note on any three   **(3 x 5marks)**

Q.1 Thermal pollution

Q.2 Desert ecosystem

Q.3 Ex-situ conservation

Q.4 Climate change

Q.5 Advantages and disadvantages of dams.

3 : 8

MAR-APR-2024 SUMMER EXAMINATION
B.Tech. CBCS
Sub. Name: Electronic Circuits
Sub. Code: 91975

Total No. of Page QP-

Day and Date: MAY ,03-05-2024
Time: 02:30 PM To 05:00 PM
Instructions.

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Q.4 Explain in detail Wildlife Protection Act.1972   **(10 marks)**

OR

Describe the various kinds of ecological pyramids with suitable diagram.

Q.5 Explain World food problem and note on effect of modern agriculture practice on environment.   **(10 marks)**

OR

Explain in detail definition, Causes, effects and control measures of Noise pollution.

Q.6 Define Environment and explain its scope and importance as multi-disciplinary subject.   **(10 marks)**

OR

What is disaster management? Explain with floods and earthquake.

◆◆◆

4 : 8

Seat No.

MAR-APR-2024 SUMMER EXAMINATION
B.Tech. CBCS
Sub. Name: Electronic Circuits
Sub. Code: 91975

Day and Date: MAY ,03-05-2024   **Total Marks: 70**
Time: 02:30 PM To 05:00 PM

Instructions: 1. Assume suitable data wherever necessary and mention it boldly
                     2. Draw neat labbelet diagrams wherever necessary

Special Inst.:   3. Q.1 is compulsory
                     4. choose any four questions from the remaining questons

Q1)   Solve MCQs. (1 Mark Each).   **[10]**

  i.   Which of the following are the components of MOSFET Amplifier?   **[1]**
       a) Source   b) Drain   c) Load   d) All of the above

  ii.   The input based impedance of a common source MOSFET is ____?   **[1]**
    a) Zero input impedance with infinite bandwidth
    b) Infinite input impedance with infinite bandwidth
    c) Infinite input impedance with zero bandwidth
    d) Zero input impedance with zero bandwidth

  iii. How will be the output voltage obtained for an ideal op-amp?   **[1]**
    a) Amplifies the difference between the two input voltages
    b) Amplifies individual voltages input voltages
    c) Amplifies products of two input voltage
    d) None of the mentioned

  iv.   Find the output voltage of an ideal op-amp. If V1 and V2 are the two input   **[1]**
    voltages
    a) VO= V1-V2
    b) VO= A×(V1-V2)
    c) VO= A×(V1+V2)
    d) VO= V1×V2

  v.   If capacitor is placed in feedback path of an opamp then the circuit can act as   **[1]**
    a) Integrator   b) Multiplier   c) Divider   d) Subtractor

  vi.   If input is connected to negative terminal of OPAMP then it is called as   **[1]**
    a) Non-inverting   b) Input   c) Inverting d) output

  vii. Zero crossing detectors is also called as   **[1]**

a) Square to sine wave generator

b) Sine to square wave generator

c) Sine to triangular wave generator

d) All of the mentioned

viii. In a phase shift oscillator, we use ………….. RC sections [1]

a) Two

b) Three

c) Four

d) None of the above

ix. Pulse stretching, time-delay, and pulse generation are all easily accomplished [1] with which type of multivibrator circuit?

a) Astable

b) Multistable

c) Monostable

d) Bistable

x. Pin number 4 in IC555 timer is for [1]

a) Reset   b) output   c) +Vcc   d) Ground

Q2) i) Explain Single stage MOSFET amplifier in CS mode.   (8M) [15]

ii) Small signal Analysis of the dual input balanced output.   (7M)

Q3) i) Draw internal Block diagram of OP-AMP and Explain the blocks.   (7M) [15]

ii) Explain the Characteristics of Ideal OP-AMP.   (8M)

Q4) i) With neat diagram explain Adder using OP-AMP. Derive the expression. [15] (7M)

ii) Explain OP-AMP as inverting & Non-inverting Amplifier   (8M)

Q5) i) With neat diagram explain RC phase shift Oscillator   (7M) [15]

ii) With neat diagram explain Triangular wave generator   (8M)

Q6) i) Draw internal Block diagram of IC555 and Explain its pin [15] configurations   (7M)

ii) With neat diagram Explain ADC 0808 & its interfacing   (8M)

* * *

Seat No. 3928

Total No. of Pages

MAR-APR-2024 SUMMER EXAMINATION
B.Tech. CBCS
Sub. Name: Microprocessors and Microcontrollers
Sub. Code: 91978

Day and Date: MAY ,13-05-2024
Time: 02:30 PM To 05:00 PM

Total Marks:

Instructions: 1. Assume suitable data wherever necessary and mention it boldly
2. Draw neat labbelet diagrams wherever necessary

Special Inst.: Q.1 is compulsory.
Solve any 4 questions from remaining questions.

Q1) Solve MCQ's (1 marks each) **[10]**

I. The CF is known as _____ **[1]**
a) carry flag   b) condition flag   c) common flag   d) single flag

II. The BP is indicated by _____ **[1]**
a) base pointer   b) binary pointer   c) bit pointer   d) digital pointer

III. _____ is used to write into memory **[1]**
a) RD   b) WR   c) RD / WR   d) CLK

IV. The JS is called as _____ **[1]**
a) jump the signed bit   b) jump single bit   c) jump simple bit   d) jump signal it

V. Which of the following pins are responsible for handling the Read Write **[1]** control logic unit of the 8255 PPI?
a) CS'   b) RD'   c) WR'   d) ALL of the above

VI. Which port of the 8255 PPI is capable of performing the handshaking function **[1]** with the interfaced devices?
a) Port A   b) Port B   c) Port C   d) All of the above

VII. Which of the following registers are not bit addressable? **[1]**
a) SCON   b) PCON   c) A   d) PSW

VIII. Which operator is the most important while assigning any instruction as register **[1]** indirect instruction?
a) $ b) #   c) @   d) &

P.T.C

IX. Auto reload mode is allowed in which mode of the timer? [1]
a) Mode 0 b) Mode 1 c) Mode 2 d) Mode 3

X. TF1, TR1, TF0, TR0 bits are of which register? [1]
a) TMOD b) SCON c) TCON d) SMOD

Q2) a) Define interrupt? Explain Software interrupt in detail   7M   [15]
b) Draw a memory segmentation of 8086 and explain with advantages
8M

Q3) a) Classify the instruction set of 8086 microprocessor and explain MOV,ADD [15]
and CMP instructions with examples
7M
b) Explain rotate instruction of 8086 microprocessor in detail   8M

Q4) a) Explain a minimum mode read timing diagram of 8086 system with neat [15]
diagram. 7M
b) Draw a maximum mode 8086 system and explain in brief.   8M

Q5) a) Explain memory organization of 8051 in detail with neat diagram   7M   [15]
b) Explain different operating modes of 8255   8M

Q6) a) List out the instruction sets of 8051, explain any three logical and arithmetic [15]
instructions with examples   7M
b) Write a following programs
i) Write a program in which the 8051 reads data from P1 and writes it to P2
continuously while giving a copy of it to the serial COM port to be transferred
serially. Assume that XTAL=11.0592MHz. Set the baud rate at 9600
ii) Write a program in which 10 bytes of data stored in RAM locations starting
from 45H are transferred serially. At the end of data transfer, the value of R0 is
displayed on P1. Assume that XTAL=11.0592MHz. Set the baud rate at 9600.
8M

* * *

[2]