

Code: 13CE2005**ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)****II B.Tech II Semester Supplementary Examinations, July-2017****CONSTRUCTION MATERIALS AND PRACTICE****(Civil Engineering)****Time: 3 Hours****Max Marks: 70****PART-A****Answer all questions****[1 x 10 = 10M]**

1. a) What are the classification of rocks?
b) What are the sources of Lime?
c) Define workability of concrete.
d) Why weathering course is laid in the top of roof slab?
e) Name the Horizontal upper portion and vertical portion of a step.
f) Define pointing.
g) Write down the different material used for outside white washing?
h) Define Density?
i) Define admixtures?
j) Define asbestos?

PART-B**Answer one question from each unit****[5X12=60M]****UNIT-1**

2. a) What are the various stages in the manufacture of brick and Explain them Briefly.
b) What are the varieties of cement? When they are used?

(OR)

3. a) Explain briefly the manufacturing process of bricks?
b) Explain the different types of cement.

UNIT-II

4. a) Explain the methods of preparation of concrete.
b) Describe in details various types of defects of painting.

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5. a) Write in detail on the different types of paint and varnish?
b) Explain in detail the types of metals used in reinforcement.

UNIT-III

6. a) What are the different types of Shallow foundation and explain any two.
b) Explain the Construction details of an English bond with neat sketches (one brick)

(OR)

7. a) What are the common types of bond used in brick work? Explain with sketch.
b) Explain briefly about the types of partition with neat sketch?

UNIT-IV

8. a) Where will you locate doors in building and draw neat sketch of fully paneled door & name in parts.
b) List out the various types of floors and explain any two.

(OR)

9. a) State the different types of stair based on shape?
b) Write in detail about the laying of A.C sheet with neat sketch.

UNIT-V

10. a) Explain the process of plastering in cement mortar with two coats.
b) Explain the process involved in colour washing.

(OR)

11. a) Explain the process of preparation and methods for white washing.
b) Explain the different types of pointing with neat sketch.

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SET-2

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)

II B.Tech II Semester Supplementary Examinations, July-2017

CONTROL SYSTEMS
(Electrical and Electronics Engineering)

Time: 3 Hours

Max Marks: 70

PART-A

ANSWER ALL QUESTIONS

[1 x 10 = 10 M]

1. a) Define transfer function.
b) Write any two rules for block diagram reduction.
c) Define type and order of a system.
d) What are the differences between DC Servo motor and a conventional DC motor?
e) List the specifications of a second order under damped systems.
f) What happens to a closed system if zeroes are present in the right half of the imaginary axis?
g) The closed loop transfer function of second order system is $C(s)/R(s) = \frac{10}{s^2 + 6s + 9}$. what is the type of damping in the system?
h) List at least three frequency domain specifications.
i) Name two advantages of feedback compensation.
j) What is diagonalization in state space representation?

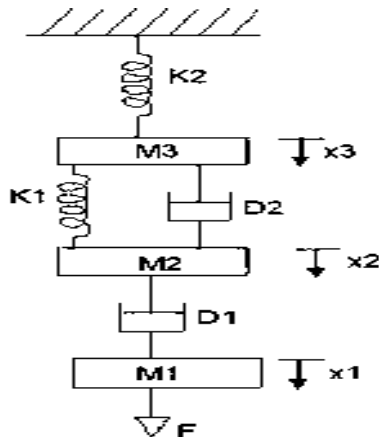
PART-B

ANSWER ONE QUESTION FROM EACH UNIT

[5 x 12 = 60M]

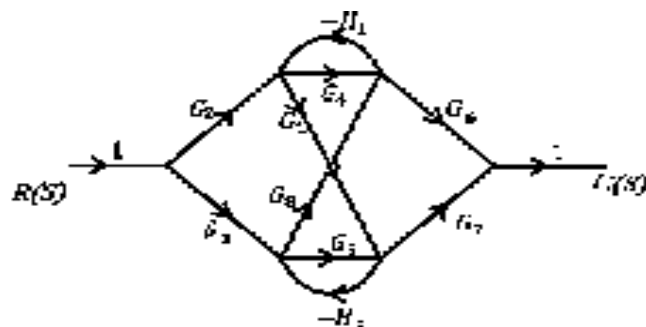
UNIT-I

2. a) Explain why is it necessary to employ feedback in control systems? Discuss the effect of feedback on various aspects regarding the performance of the system. [4M]
b) For the mechanical system shown below, write the dynamic equations. [8M]

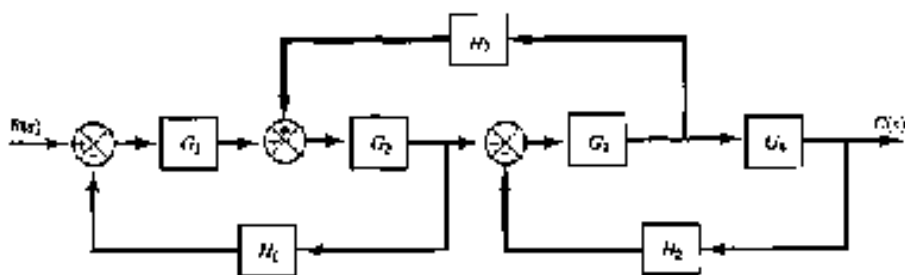


(OR)

3. a) State the Mason's gain formula. Determine the overall transfer function from the signal flow graph. [6M]



- b) Using block diagram reduction techniques, obtain the transfer function $C(s)/R(s)$ for the block diagram given below. [6M]



UNIT-II

4. a) Derive the transfer function of a field controlled DC servo motor. [8M]
- b) Define the following [4M]
- Rise time
 - Peak time
 - Settling time
 - Maximum peak overshoot

(OR)

5. a) Explain the effects of proportional derivative, proportional integral systems with a suitable example. [5M]
- b) Find the error constants and steady state errors for a velocity input $r(t) = 2t$ and a step input of 2 units. The system is given by $G(s)H(s) = \frac{10}{s(s+5)}$. [7M]

UNIT-III

6. Using R-H criterion, check the stability of the system whose characteristic equation is given by $F(s) = s^6 + 3s^5 + 2s^4 + 6s^3 + 4s^2 + 3s + 2$. Also, find the frequency of sustained oscillation, if any. [12M]

(OR)

7. Sketch the root locus of a system whose open loop transfer function with unity feedback is given by $G(s) = \frac{K(1+s)}{s(s+2)(s+5)}$. Determining the following: [12M]
- Centroid, number and angle of asymptotes.
 - Angle of departure of root loci from the poles
 - Break away points, if any and
 - The value of 'K' and the frequency at which the root loci cross the $j\omega$ axis.

UNIT-IV

8. Sketch the Bode plot, given $G(s) = \frac{(1+100s)(1+s)}{(1+10s)(1+0.1s)}$. [12M]
- Assume unity feedback. Obtain gain and phase margin from the plot.

(OR)

9. The open loop transfer function of negative feedback system is given by [12M]
- $$G(s)H(s) = \frac{K(s+1)}{s^2(s+2)(s+11)}$$
- using nyquist stability criteria find the range of 'K' for closed loop system to be stable.

UNIT-V

10. a) What is a lag compensator, obtain the transfer function of lag compensator and draw its pole-zero plot. [4M]
- b) Design a suitable compensating network for $G(s) = \frac{K}{s(1+s)(1+0.5s)}$ so that the [8M]
- compensated network will have k_v (velocity error constant) = 5 and phase margin = 35° .

(OR)

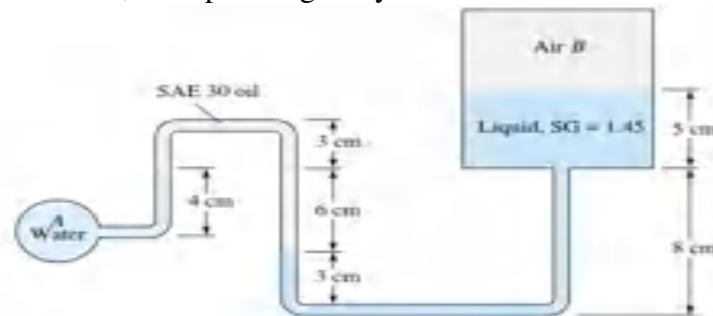
11. a) What is a state transition matrix? Discuss the properties of it. [4M]
- b) For a system given by its transfer function $\frac{C(s)}{R(s)} = \frac{10}{s(s+2)(s+3)}$, obtain the [8M]
- State variable representation. Also find the State Transition Matrix.

Code: 13ME2008**ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)****II B.Tech II Semester Supplementary Examinations, July-2017****FLUID MECHANICS AND HYDRAULIC MACHINERY
(Mechanical Engineering)****Time: 3 Hours****Max Marks: 70****PART-A****Answer all questions****[1X10 =10 M]**

1.
 - a) Define specific gravity of a fluid.
 - b) Differentiate between Newtonian and non-Newtonian fluid.
 - c) What are the applications of surface tension?
 - d) Does water boil at higher temperatures at higher pressures? Explain.
 - e) What is meant by priming of a pump?
 - f) What is a draft tube what are its functions?
 - g) Distinguish between compressible flow and incompressible flow.
 - h) Define slip in reciprocating pumps.
 - i) List out the major and minor losses in pipes?
 - j) Write the Bernoulli's equation.

PART-B**Answer one question from each unit****[5x12=60M]****UNIT-I**

2. In the fig. the pressure at point A is 1.72 bar. All fluids are at 20°C. What is the air pressure in the closed chamber B? Take $\gamma = 9790 \text{ N/m}^3$ for water, 8720 N/m^3 for SAE 30 oil, and specific gravity for the third fluid is 1.45.

**(OR)**

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3. a) A liquid at 20°C has a relative density of 0.80 and a kinematic viscosity of 2.3 centistokes. Determine its i) unit weight and ii) dynamic viscosity.
- b) The pressure outside the droplet of water of dia 0.04 mm is 10.32 N/cm². calculate the pressure within the droplet if surface tension is given as 0.0725 N/m of water

UNIT-II

4. Derive the Bernoulli's equation from the Euler's equation.
- (OR)**
5. For the velocity components in a fluid flow given by $u=2xy$ and $v= a^2+x^2-y^2$, show that the flow is possible. Obtain relevant stream function.

UNIT-III

6. A venturimeter of throat diameter 5 cm is fitted into a 12.5cm diameter water pipeline. the coefficient of discharge is 0.96.calculate the flow in the pipeline when the reading on a mercury-water differential U-tube manometer connected to the upstream throat and shows a reading of 20cm. if the energy loss in the downstream divergent cone of the meter is 10 times the velocity head in the pipe, calculate the total head loss of the meter.
- (OR)**
7. Oil flows through a 25 mm diameter orifice under a head of 5.5 m at a rate of 3 Litre/s. The jet strikes the wall 1.5 m away and 120 mm vertically below the centerline of the contracted jet. calculate the coefficients of velocity, contraction and discharge.

UNIT-IV

8. Design a Francis turbine .net head =68 m ; speed =750 rpm output power= 330 kW; $\eta_h=94\%$; $\eta_o=85\%$; flow ratio $\psi=0.15$; breadth ratio $n=0.1$; inner dia of runner is 0.5 times outer dia. Also assume 6% of circumferential area of the runner to be occupied by the thickness of vanes. Velocity of the flow remains constant and radial at the exit.
- (OR)**
9. What are the characteristic curves of a hydraulic turbine? How are they useful to practical engineer?

UNIT-V

10. Derive the expression for power required to run a double acting reciprocating pump.
- (OR)**
11. Why are centrifugal pumps used sometimes in series and sometimes in parallel? Draw and discuss characteristics curves for a centrifugal pump

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SET-I

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)

II B.Tech II Semester Supplementary Examinations, July-2017

ANALOG COMMUNICATIONS (Electronics and Communication Engineering)

Time: 3 Hours

Max Marks: 70

PART-A

ANSWER ALL QUESTIONS

[1 x 10 = 10 M]

1. a) Represent P_t in Amplitude modulation.
b) What is the difference between over modulation and under modulation
c) Compare the DSB and SSB systems
d) Discuss Quadrature null effect of DSB-SC
e) Define frequency deviation of FM.
f) Explain about TDM
g) Define sensitivity, selectivity.
h) What is the importance of AGC
i) What is threshold effect in an envelope detector?
j) Distinguish between PAM & PWM.

PART-B

Answer one question from each unit

[5x12=60M]

UNIT-I

2. a) Describe an expression for AM wave and sketch its frequency spectrum. **6M**
b) Explain the square law detection of AM signals. **6M**
(OR)
3. a) Explain the generation of AM wave using switching modulator. **7M**
b) What is modulation? Why is modulation used in communication system? **5M**

UNIT-II

4. a) Explain DSB-SC generation by using Balanced Modulator. **6M**
b) Discuss the vestigial sideband modulation in time domain and frequency domain? **6M**
(OR)
5. a) Evaluate the effect of frequency and phase error in the demodulation of DSB-SC wave using Synchronous detector **6M**
b) Explain the phase discrimination method of generating SSB modulated waves with the help of neat diagram. **6M**

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SET-I

UNIT-III

6. a) Give the comparison of FM and AM waves for sinusoidal modulation. **4M**
b) Compute the bandwidth requirement for the transmission of FM signal having a frequency Deviation of 75 kHz and an audio bandwidth of 10kHz. What will be the change in the Bandwidth, if modulating frequency is doubled? Determine the bandwidth when modulating Signal amplitude is also doubled. **8M**
- (OR)**
7. a) Explain the difference between Narrow band FM and Wide band FM. **6M**
b) Explain the detection of FM wave using balanced frequency discrimination. **6M**

UNIT-IV

8. a) Draw the block diagram of super hetrodyne receiver and the function of each block. **6M**
b) Discuss the factors influencing the choice of intermediate frequency (IF) for a radio Receiver. **6M**
- (OR)**
9. a) List out the advantages and disadvantages of TRF receivers. **7M**
b) What is an image frequency? How is image frequency rejection achieved? **5M**

UNIT-V

10. a) Explain the PPM generation from PWM with a neat block diagram and necessary figures. **6M**
b) Derive an expression for the S/N ratio for an FM System. **6M**
- (OR)**
11. a) Prove that the figure of merit for SSB-SC is 1. **6M**
b) Draw the circuit of PPM demodulator and explain the operation. **6M**

**OBJECT ORIENTED PROGRAMMING
(Common to CSE & IT)****Time: 3 Hours****Max Marks: 70****ANSWER ALL QUESTIONS****PART-A****[1 x 10 = 10 M]**

1. a) What is abstraction?
b) What is an array?
c) What is bytecode?
d) What is a Java Virtual Machine?
e) What is deadlock?
f) What is recursion?
g) What is a constructor?
h) What is a method?
i) What is CLASSPATH?
j) What is an abstract method?

PART-B**Answer one question from each unit****[5x12=60M]****UNIT-I**

2. Explain primitive data types present in Java? 12M
- (OR)**
3. Explain about Object Oriented Principles? 12M

UNIT-II

4. a) Discuss Fundamentals of Class & Object With an example program? 6M
b) Explain Method overloading with an example program? 6M
- (OR)**
5. a) Discuss Nested and Inner Classes with an example program? 6M
b) Explain constructor overloading with an example program? 6M

UNIT-III

6. a) Analyze dynamic method dispatch with an example program? 6M
b) Explain multilevel Inheritance with an example program? 6M
- (OR)**
7. a) What is interface? What is the use of Interface with an example program? 6M
b) Explain deferent types of inheritance? 6M

UNIT-IV

8. What is Exception? Explain about Exception Handling Mechanism 12M
- (OR)**
9. What is a Thread? Explain about Thread Life Cycle with Suitable example 12M

UNIT-V

10. a) Explain about Event Handling Mechanism? 6M
b) What is Applet? Explain about Applet Life Cycle. 6M
- (OR)**
11. a) Compare differences between applets and applications? 6M
b) Discuss JApplet and JFrame? 6M