AR16

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
IIB.Tech II Semester Supplementary Examinations, July, 2019

TRANSFORM THEORY

Time: 3 Hours   **Max.Marks: 70**

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

UNIT-I

1. a) Show that $Z\left(\frac{1}{n+1}\right) = z.\log(\frac{z}{z-1})$.   **7M**
    b) Find the value of $Z(sinn\theta)$ and $Z(a^n sinn\theta)$ **7M**

(OR)

2. a) Find the value of $Z[n^2 a^n]$ **7M**
    b) If $Z(u_n) = \frac{2z^2+4z+12}{(z-1)^4}$ find u_2.   **7M**

UNIT-II

3. a) Find $Z^{-1}[\frac{2z^2+3z}{(z+2)(z-4)}]$ **7M**
    b) Using Convolution Theorem, evaluate $Z^{-1}[\frac{1}{n!} * \frac{1}{n!}]$ **7M**

(OR)

4. a) Find $Z^{-1}[\frac{z+1}{z^2-3z+2}]$ **7M**
    b) Using Convolution Theorem, evaluate $Z^{-1}[\frac{z^2}{(z-4)(z-5)}]$ **7M**

UNIT-III

5.   **14M**

Using Fourier integral show that $e^{-ax} - e^{-bx} = \frac{2(a^2-b^2)}{\pi}\int_0^\infty \frac{\lambda sin\lambda x}{(\lambda^2+a^2)(\lambda^2+b^2)}d\lambda , a,b > 0$

(OR)

6. Find the Fourier transform of $e^{-a|x|}(a > 0)$ and hence show that $F(xe^{-a|x|}) = \frac{i4ap}{(a^2+p^2)^2}$.   **14M**

UNIT-IV

7. Find the Fourier transform of $f(x)$ defined by $f(x) = \begin{cases} 1 - x^2, & |x| \le 1 \\ 0, & |x| > 1 \end{cases}$ and hence evaluate   **14M**

and $\int_0^\infty \frac{xcosx-sinx}{x^3} cos\frac{x}{2}dx$

(OR)

8. Find the inverse Fourier sine transform of $f(x)$ of $F_s(p) = \frac{p}{p^2+1}$.   **14M**

UNIT-V

9. Solve the difference equation, using Z-transform $u_{n+2} + 3u_{n+1} + 2u_n = 0$,   **14M**
    given $u_0 = 0, u_1 = 1$

(OR)

10. Solve $u_{n+2} - 5u_{n+1} + 6u_n = 5^n$ where $u_0 = 0, u_1 = 0$.   **14M**

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UNIT-I

1. a) Draw sign conventions of earth, sand filling, concrete, timber and marble?   10M
   b) Draw symbols for electrical installation.   4M
      i. Wiring under the surface
      ii. buzzer

(OR)

2. a) Draw sign conventions of lead, sand, brick, sheet metal and glass?   10M
   b) Draw symbols for electrical installation.   4M
      i. Emergency lamp
      ii. Exhaust fan

UNIT-II

3. a) Based on the principles of planning of residential building, draw a line diagram (plan) of residential building in the site 15 m x 12 m. the main road is located on northern side of the site. The east-west Dimensions of the site is 12m.   10M
   b) What is reduced scale? How can you read scaled drawing?   4M

(OR)

4. a) What is the principle of planning of residential building? And brief any two factors which govern planning of residential building.   10M
   b) What is the role of engineer in planning and execution of buildings?   4M

UNIT-III

5. a) What is meant by orientation of building? Mention some suggestions for good orientation of building in tropical climate.   10M
   b) Write the steps in construction of buildings   4M

(OR)

6. a) A primary health centre is to be considered in a village. The site measuring 75m X 40 m with frontage along NS direction. The wind direction is South- South East. Draw the line diagram of the building to accommodate i) Waiting room ii) Examination Room and iii) Verandah.   10M

b) Name the rooms, which are preferred in south-west Directions.   4M

UNIT-IV

7. a) Write short notes on floor area ratio. How it is related to height of the building.   7M

b) Write a short notes on   7M
   i. Bye-laws for open area in building
   ii. Bye-laws for frontage in building

(OR)

8. a) What are the objectives of building bye-laws?   7M

b) Explain the importance of lighting and ventilation as per building bye-laws.   7M

UNIT-V

9.   Draw a developed plan and elevation for following fig.1   14M

(OR)

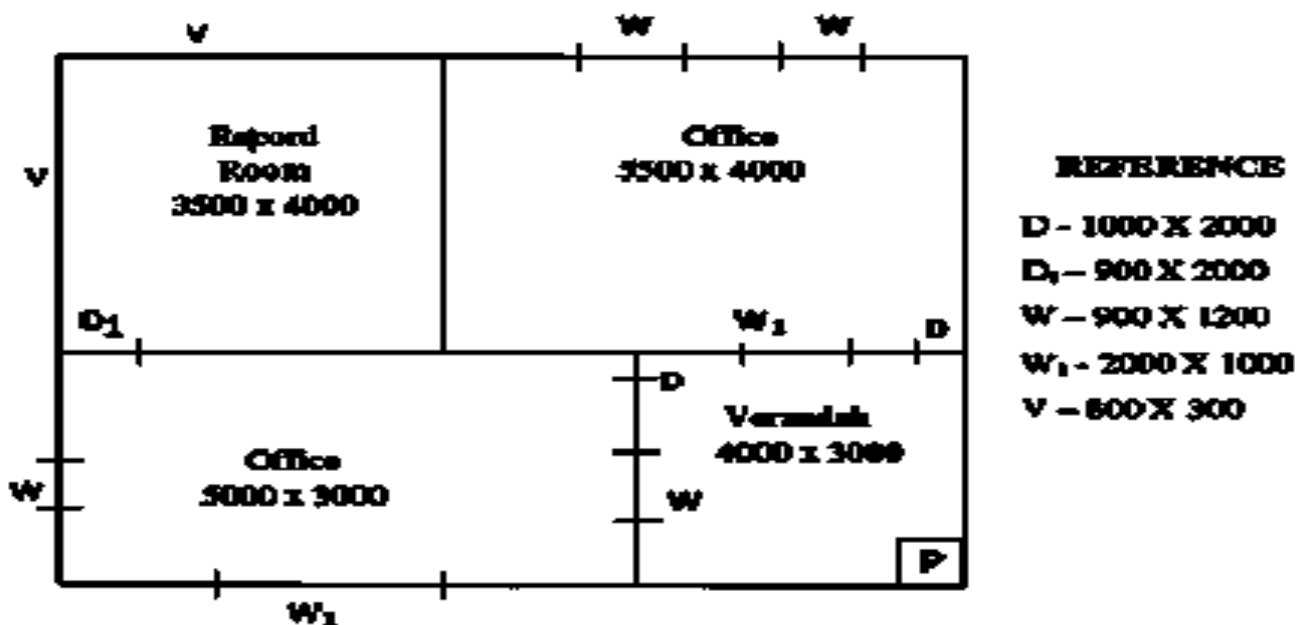10.   Sketch the section along record room and Office room for following fig.1   14M

Fig.1

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CODE: 16OE2023   **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
II B.Tech. II Semester Supplementary Examinations, July, 2019
RENEWABLE ENERGY SOURCES

Time: 3 Hours   Max Marks: 70

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

UNIT-I

1. Define the following terms: i) Altitude Angle ii) Incident Angle iii) Zenith Angle   **14M**
   iv) Solar Azimuth Angle v) Hour angle

(OR)

2. a) Explain any one instrument in detail for solar energy measuring instrument?   **8M**

   b) Explain about the Beam and Diffuse radiation   **6M**

UNIT-II

3. Explain various types of Concentrating type of collectors   **14M**
   (OR)
4. a) Mention the various applications of solar energy   **6M**
   b) Describe the principle of solar photovoltaic energy conversion   **8M**

UNIT-III

5. Explain the principle and application of wind electric system. State the basic   **14M**
   Components and their working in wind electric system.
   (OR)
6. a) Explain anyone type of biogas plant with neat sketch   **7M**
   b) Write the Classifications of WECS for power generation.   **7M**

UNIT-IV

7. Explain the basic principle of working Ocean thermal energy conversion   **14M**
   (OTEC) with a neat diagram
   (OR)
8. a) Write a short note on geothermal energy? Classify various types of geothermal   **8M**
   energy systems
   b) Explain the principle ,advantages of Tidal power generation   **6M**

UNIT-V

9. Write a short note on   **14M**
   i)Hall effect ii) Peltier effect iii)Seebeck effect
   (OR)
10. a) Explain the principle of MHD power generation   **7M**
    b) Explain the construction and working principle of fuel cell with neat sketch.   **7M**

1 of 1

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UNIT-I

1.	Illustrate basic functional description of measuring instruments?	14M
	(OR)	
2.	Define accuracy, precision, sensitivity, repeatability, tolerance, range, span and resolution?	14M

UNIT-II

3.		With a neat sketch explain working principle and operation of ring balance mano manometer	14M
		(OR)	
4.	a)	With a neat sketch explain working principle and operation of rota meter and list out any 4 merits and demerits?	7M
	b)	Briefly explain working principle and operation of hot wire anemometer with a neat sketch?	7M

UNIT-III

5.		Explain working principle of bimetallic thermometer with a neat diagram? And list out their advantages and disadvantages?	14M
		(OR)	
6.	a)	Briefly discuss working principle of glass thermometer with neat sketch?	7M
	b)	with neat sketch explain working principle of metal thermometer?	7M

UNIT-IV

7.	Explain working principle and operation of LVDT and state their advantages, disadvantage and application?	14M
	(OR)	
8.	With suitable sketches explain working principle and operation of capacitive transducer and state their advantages, disadvantage and application?	14M

UNIT-V

9.		With a neat sketch explain working principle and operation of stroboscope and list merits, demerits and applications?	14M
		(OR)	
10.	a)	Differentiate mechanical load cell with hydraulic load cell?	7M
	b)	Write a short note on strain gauge load cell?	7M

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ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
II B.Tech II Semester Supplementary Examinations, July, 2019

PRINCIPLES OF COMMUNICATIONS

Time: 3 Hours   Max Marks: 70

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

UNIT-I

1.	a)	Discuss types of signals and write Fourier Transform for various signals.	**10M**
	b)	What are the elements of communication system?	**4M**

(OR)

2.	a)	What is correlation? Explain auto correlation function and power spectral density.	**10M**
	b)	Explain the convolution of two signals.	**4M**

UNIT-II

3.	a)	What is the Need for modulation and what are types of Amplitude modulation?	**10M**
	b)	Write advantages of FM over AM.	**4M**

(OR)

4.	a)	An AM Transmitter is radiating 132 KW when a certain audio sine wave is modulating it to a depth of 80% .Find the carrier power. If it radiates 150KW when a second sinusoidal audio tone also modulated simultaneously. Calculate the modulation index for second audio tone. Determine overall modulation index.	**10M**
	b)	What are merits of Frequency Modulation?	**4M**

UNIT-III

5.	a)	Define sampling and Nyquist rate .State sampling theorem for band limited signals.	**10M**
	b)	Discuss Time Divison Multiplexing.	**4M**

(OR)

6.	a)	Describe Pulse Amplitude Modulation and demodulation in detail.	**10M**
	b)	Compare TDM and FDM techniques	**4M**

UNIT-IV

7.	a)	Draw block diagram of Pulse Code Modulation and explain each block in detail.	**10M**
	b)	Define Phase Shift Keying Modulation. Show PSK waveform.	**4M**

(OR)

8.	a)	Compare Delta Modulation and Adaptive Delta Modulation	**10M**
	b)	Define quantization and quantization error.	**4M**

UNIT-V

9.	a)	Discuss i) Concept of information ii) rate of information iii) entropy	**10M**
	b)	Define coding efficiency.	**4M**

(OR)

10.	a)	Explain Shannon Fano code and obtain Shannon Fano Code with an example.	**10M**
	b)	What is source coding?	**4M**

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CODE: 16OE2026   **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
II B.Tech II Semester Supplementary Examinations, July, 2019

INTRODUCTION TO JAVA

Time: 3 Hours   Max Marks: 70

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

UNIT-I

1.		Explain about Java Features?	14M

(OR)

2.	a)	What is an object oriented programming? Explain principals of OOPs?	7M
	b)	Define an array? Explain array declaration with suitable example	7M

UNIT-II

3.	a)	List out the differences between method and constructor	4M
	b)	Write a java program to illustrate Method Overloading and Constructor Overloading.	10M

(OR)

4.	a)	Write syntax for defining a class and how to access members of class through object explain with suitable example.	8M
	b)	Define Recursion? Explain Recursion in java with suitable example?	6M

UNIT-III

5.	a)	Define inheritance. Explain member access rules in java**?**	7 M
	b)	Explain the usage of 'super' keyword with suitable example	7 M

(OR)

6.	a)	What is dynamic method dispatch? Write a Java program to demonstrate dynamic method dispatch	7M
	b)	What is an abstract class? Write a Java program to demonstrate abstract class.	7M

UNIT-IV

7.	a)	Explain user defined exceptions with suitable example?	7M
	b)	Discuss the key terms "throw" and "throws". Give suitable examples	7M

(OR)

8.		What is an Exception? Explain about Exception Handling mechanism with an example.	14M

UNIT-V

9.	a)	What is thread? Explain the life cycle of the thread?	7M
	b)	Explain thread priorities with suitable example?	7M

(OR)

10.		Write differences between Process and Thread? Explain creation of multiple threads using thread class?	14M

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CODE: 16OE2027   **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

II B.Tech. II Semester Supplementary Examinations, July, 2019

INTRODUCTION TO PYTHON

Time: 3 Hours   **Max Marks: 70**

Answer ONE Question from each Unit

Each Questions Carry 14 Marks

All parts of the Question must be answered at one place

UNIT-I

1.	a)	State the history of PYTHON.	7M
	b)	Explain PYTHON environment setup and execution of a PYTHON program.	7M
		(OR)	
2.	a)	Classify the basic data types in PYTHON with an example.	7M
	b)	Explain the type conversion in PYTHON with an example.	7M

UNIT-II

3.	a)	Describe conditional statements in PYTHON with syntax.	7M
	b)	Differentiate break, continue, and pass with a suitable PYTHON program.	7M
		(OR)	
4.	a)	Explain the word on 'indentation' with an example.	7M
	b)	Write a PYTHON program to display numbers from 10 to 1 in descending order.	7M

UNIT-III

5.	a)	Define the operation of slicing or indexing in PYTHON with an example.	7M
	b)	Define tuple. Explore the operations on tuple in PYTHON with examples.	7M
		(OR)	
6.	a)	Define set. Explore the operations on set in PYTHON with examples.	7M
	b)	Define function. Explore the 'built-in' and 'user-defined' functions in PYTHON.	7M

UNIT-IV

7.	a)	Define Error. Classify the Errors in a PYTHON program.	7M
	b)	Write a PYTHON program to handle single and multiple exceptions.	7M
		(OR)	
8.	a)	Define file. Explore the file input / output functions in PYTHON.	7M
	b)	Write a PYTHON program to count no. of lines, words and characters in a text file.	7M

UNIT-V

9.	a)	Mention the features of OOPs in PYTHON.	7M
	b)	Differentiate 'class' and 'object' with a suitable PYTHON program.	7M
		(OR)	
10.	a)	Differentiate Encapsulation and Abstraction in PYTHON.	7M
	b)	Write a PYTHON program that illustrates the concept of Inheritance.	7M

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CODE: 16OE2028   **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
II B.Tech II Semester Supplementary Examinations, July,2019
COMPLEX VARIABLES

Time: 3 Hours   **Max Marks: 70**

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

UNIT-I

1. a) Show that the function $u = 2\log(x^2 + y^2)$ is harmonic.   **7 M**
    b) Find the analytic function f(z)= u +iv whose real part is u(x,y)=$\frac{y}{x^2+y^2}$.   **7 M**

(OR)

2. Show that $u(x,y) = e^{2x}(x\cos 2y - y\sin 2y)$ is harmonic and find its harmonic   **14 M**
    conjugate by Milnes – Thomson method.

UNIT-II

3. a) Evaluate $\int_C (y^2 + z^2)dx + (z^2 + x^2)dy + (x^2 + y^2)dz$ from (0,0,0) to (1,1,1) where   **7 M**
        C is the curve $x = t, y = t^2, z = t^3$
    b) Evaluate $\int_c \frac{\sin\pi z^2 + \cos\pi z^2}{(z-1)(z-2)}dz$ where c is $|z| = 3$ using Cauchy's integral formula.   **7 M**

(OR)

4. a) Evaluate $\int_0^{1+i}(x^2 + iy)dz$ along the paths (i) y = x (ii) y = x^2 **7 M**

    b) Evaluate $\int_C \frac{\log z}{(z-1)^3}dz$ where c is $|z-1| = \frac{1}{2}$ using Cauchy's integral   **7 M**
        formula.

UNIT-III

5. Expand $f(z) = \frac{1}{(z^2-3z+2)}$ in the region (i) $0 < |z - 1| < 1$ (ii) $1 < |z| < 2$ **14 M**

(OR)

6. Find the Laurent series expansion of the function $f(z) = \frac{z^2-6z-1}{(z-1)(z-3)(z+2)}$ in   the   **14 M**
    region $3 < |z + 2| < 5$

UNIT-IV

7. a) Find the poles and the Residues of $\frac{3z+1}{(2z-1)(z+1)}$ **7 M**
    b) Evaluate $\int_c \frac{z}{(z-1)(z-2)^2}dz$ where C is the circle $|z - 2| = \frac{1}{2}$ using Residue Theorem.   **7 M**

(OR)

8. a) Evaluate $\int_c \frac{\sin z}{z\cos z}dz$ where C is $|z| = \pi$ by Residue Theorem.   **7 M**

    b) Find the poles of the function $\frac{z+1}{z^2(z-1)}$ and the Residues at these poles.   **7 M**

UNIT-V

9. Evaluate $\int_0^{2\pi} \frac{1}{2-\sin\theta} d\theta$ using residue theorem.   **14 M**

(OR)

10. Evaluate $\int_0^\infty \frac{1}{1+x^2} dx$ using residue theorem.   **14 M**

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ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI (AUTONOMOUS)
II B.Tech II Semester Supplementary Examinations, July, 2019
COMPUTATIONAL NUMBER THEORY

Time: 3 Hours   Max Marks: 70

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

UNIT-I

1. a   Obtain gcd of 858 and 325   **7M**

    b   Express 858 and 325 in the form of m.858 + n.325   **7M**

(OR)

2. Prove that $9^n - 8^n - 1$ is divisible by 8   **14M**

UNIT-II

3. Show that $10^n + 3.4^{n+2} + 5 \equiv 0 \ (Mod \ 9)$ **14M**

(OR)

4. Solve the congruence $13x \equiv 10 \ (Mod \ 28)$ **14M**

UNIT-III

5. Define Euler-Fermate theorem. Hence, Show that $n^{16} - a^{16}$ is divisible by 85 if n and a   **14M**
   are co-prime to 85.

(OR)

Define Wilson theorem. Hence, show that $(6! + 1)$ is divisible by 7.   **14M**
6

UNIT-IV

7.   Define Mobius function μ. Determine $\mu(11), \mu(15)$ **14M**

(OR)

8.   Define Euler Totient FunctionΦ. Determine $\Phi(180)$ **14M**

UNIT-V

9.   Evaluate (2/3) and (2/19)   **14M**

(OR)

10. Determine whether 85 is quadratic residue of 223 or not   **14M**

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CODE: 16OE202A **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
II B.Tech II Semester Supplementary Examinations, July, 2019

REMOTE SENSING

Time: 3 Hours **Max Marks: 70**

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

UNIT-I

1. Define the term remote sensing and explain about basic components of an ideal remote sensing system with neat sketch?   14

(OR)

2. What is meant by electromagnetic energy and List the two models used to describe the electromagnetic energy with neat sketch?   14

UNIT-II

3. Define passive sensors and discuss about characteristics of Gamma-ray Spectrometer, Multi Spectral Scanner, Imaging Spectrometer and Thermal Scanner?   14

(OR)

4. What do you mean by active sensors and discuss about its characteristics?   14

UNIT-III

5. Define platform and explain about air-born platforms?   14

(OR)

6. List and describe the various orbit characteristics? Enumerate the characteristics of Sun-synchronous satellites?   14

UNIT-IV

7. Write a detailed description on the elements of visual interpretation quoting suitable examples for each?   14

(OR)

8. Define the term image enhancement and elucidate about non-linear contrast enhancement?   14

UNIT-V

9. What is meant by image classification? Explain about the principles of image classification?   14

(OR)

10. Explain about the unsupervised classification?   14

AR13

CODE: 13CE2009 SET-I

CONCRETE TECHNOLOGY
(Civil Engineering)

Time: 3 Hours   Max Marks: 70
Allow to use Code book IS10262-2009

PART-A

ANSWER ALL QUESTIONS   [1 x 10 = 10 M]

1. a) What is meant by "Quick Setting Cement"?
   b) What is meant by Plasticizer?
   c) Define the term Fineness Modulus?
   d) What is meant by the term Shrinkage of Concrete? Why it occurs?
   e) Name the types of Workability tests on Concrete?
   f) What are the factors affecting Creep?
   g) What is the IS Code used for concrete mix design
   h) What is meant by High Performance Concrete?
   i) Names the types of Shrinkage?
   j) What are the variables to be considered in Concrete mix design?

PART-B

Answer one question from each unit   [5x12=60M]

UNIT-I

2. Discuss about different types of mineral and chemical admixtures used in Concrete?

(OR)

3. Describe the procedure to determine the Setting time of Cement.

UNIT-II

4. a) Differentiate between Coarse Aggregate and Fine Aggregate?
   b) Explain about the Bulking of Sand.

(OR)

5. Mention the different types of Workability tests and explain any one of them in detail?

UNIT-III

6. Define
   i) Water/Cement ratio   ii)   Pull out test   iii)   Pulse velocity test.

(OR)

7. Name the different types of Non destructive tests used in Concrete and explain about the Resonant frequency method?

UNIT-IV

8. Define the term Shrinkage? Discuss about Plastic Shrinkage and Drying Shrinkage?

(OR)

9. Explain the term Creep? Discuss the factors affecting Creep.

UNIT-V

10. Discuss the basic parameters which influence the design of the Concrete mix as per **IS10262-2009**

(OR)

11. Explain the various factors that influence the design of the Concrete mix as per **IS10262-2009**

AR13

CODE: 13ME2010   SET-1

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
II B.TECH II SEM SUPPLEMENARY EXAMINATIONS, JULY, 2019

DESIGN OF MACHINE MEMBERS - I
(Mechanical Engineering)

Time: 3 Hours   Max Marks: 70

PART-A

ANSWER ALL QUESTIONS   [1 x 10 = 10 M]

1. a) What are the steps involved in design of machine element.
    b) Name the components made of carbon steel castings
    c) Define stress concentration, endurance limit
    d) What is the cause of Residual stresses in welded joint?
    e) What are the advantages of welded joints compared with riveted joints?
    f) Differentiate between thick cylinder and thin cylinder.
    g) What is the function of Feather key and woodruff key?
    h) Which theories of failure are applicable for shafts?
    i) What are the advantages of flange coupling?
    j) What type of stress is induced in helical extension spring?

PART-B

Answer one question from each unit   [5x12=60M]

UNIT-I

2. The load on a bolt consists of an axial pull of 10 kN together with a   12M
    transverse shear force of 5 kN. Find the diameter of bolt required according
    to 1. Maximum principal stress theory; 2. Maximum shear stress theory

(OR)

3. a) Explain the following terms a) Reliability factor b) High cycle fatigue   4M
        failure
    b) A 40mm diameter shaft is made of steel $50c_4$ (S_{ut}=660N/mm^2) and has   8M
        machined surface. The expected reliability is 99%.The theoretical stress
        concentration factor for the shape of the shaft is 1.6 and the notch sensitivity
        factor is 0.9.Determine the endurance limit of the shaft.

UNIT-II

4. Find the efficiency of the following riveted joints: 12M
    1. Single riveted lap joint of 6 mm plates with 20 mm diameter rivets having
    a pitch of 50 mm.
    2. Double riveted lap joint of 6 mm plates with 20 mm diameter rivets
    having a pitch of 65 mm. Assume Permissible tensile stress in plate = 120
    MPa Permissible shearing stress in rivets = 90 MPa, Permissible crushing
    stress in rivets = 180 MPa.

(OR)

5. a) What is reinforcement in weld? What are its advantages and disadvantages?   5M
    b) A circular shaft 75mm in diameter is welded to the support by means of a   7M
        circumference fillet weld. It is subjected to a torsional moment of 3000N-
        m.Determine the size of weld, if the maximum shear stress in the weld is not
        to exceed 70N/mm^2

UNIT-III

6. a) What is bolt of uniform strength.   3M

    b) The following data is given for the bracket   9M
   $P = 25kN$,$e=100mm$,$l_1=150mm$,$l_2=25mm$.There is no preload in the bolts.
   The bolts are made of plain carbon steel $45c_8$ ($S_{yt}=380N/mm^2$) and the factor
   of safety is 2.5 using the maximum shear stress theory, no of
   bolts=4,Assume the suitable data for any missing.

(OR)

7. a) Differentiate between circumferential stress and longitudinal stress is a   4M
   cylindrical shell when subjected to internal pressure.

    b) A mild steel cylinder of internal diameter 150mm and thickness 25mm is   8M
   subjected to a pressure of $6N/mm^2$.Calculate the tangential and radial
   stresses at the inner middle (radius=90mm) and outer surfaces

UNIT-IV

8. a) What is sunk key. What are the types of sunk keys   4M

    b) A shaft 40mm in diameter is transmitting 35Kw power at 300rpm by means   8M
   of Kennedy keys of 10mm*10mm cross section. The keys are made of steel
   $45c_8(S_{yt=}S_{yc=}380N/mm^2)$

(OR)

9. a) Explain the following   5M
   i)cotter joints ii)Knuckle joints

    b) Design a knuckle joint to transmit 150 kN. The design stresses may be taken   7M
   as 75 MPa in tension, 60 MPa in shear and 150 MPa in compression.

UNIT-V

10. a) Explain the design procedure for rigid flange coupling.   6M

     b) A rigid coupling is used to transmit 50KW power at 300 rpm. There are six   6M
   bolts. The outer diameter of the flanges is 200mm.While the recess
   diameter is 150mm.The coefficient of friction of the flanges is 0.15.The
   bolts are made of steel $45C_8$ ($S_{yt}=380N/mm^2$) and the factor of safety is
   3.Determine the diameter of the bolts. Assume that the bolts are fitted in
   large clearance holes.

(OR)

11. a) Distinguish between closely coiled and open coiled helical springs.   4M

     b) A helical compression spring of a cam mechanism is subjected to an initial   8M
   pre load of 50N.The maximum operating force during the load cycle is
   150N.The wire diameter is 3mm,while the mean coil diameter is 18mm
   .The spring is made of oil hardened and tempered value spring wire of
   grade Vw ($S_{yt}=1430N/mm^2$.Determine the factor of safety used in the
   design on the basis of fluctuating stresses

AR13

SET-2

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
II B.TECH II SEM SUPPLEMENTARY EXAMINATIONS, JULY, 2019

OBJECT ORIENTED PROGRAMMING
(Common to CSE & IT)

Time: 3 Hours   **Max Marks: 70**

PART-A
ANSWER ALL QUESTIONS   **[1 x 10 = 10 M]**

1. a) Define type conversion?
    b) Define scope and life time of variable?
    c) Illustrate the usage of 'this' keyword?
    d) List out various access specifiers in OOP?
    e) Define Inheritance?
    f) Define Class path with example?
    g) Importance of Finally keyword in Exception handling?
    h) What is the role of join ( ) in multithreading?
    i) Define Applet?
    j) What is the responsibility of layout manager?

PART-B
Answer one question from each unit   **[5x12=60M]**
UNIT-I
2. a) Explain about java buzz words with suitable example?   8M
    b) Briefly describe the various operators with suitable examples?   4M
    (OR)
3. a) Write a java program to implement binary search?   6M
    b) Discuss about control statements with examples?   6M
UNIT-II
4. a) What is constructor? What are the rules of constructor? Give an example?   6M
    b) Discuss about method overloading with examples.   6M
    (OR)
5. a) Define a class? How to create objects and access them? Explain with example? 6M
    b) Explain the usage of static keyword in various types?   6M
UNIT-III
6. a) Differentiate between Class & Interfaces? Give suitable examples?   6M
    b) Explain about the super keyword with examples.   6M
    (OR)
7. a) Explain the usage of final keyword in various types?   6M
    b) Differentiate between method overloading and method overriding with examples? 6M
UNIT-IV
8. a) Explain thread synchronization with example?   6M
    b) Write a java program to illustrate exception handling?   6M
    (OR)
9. a) Explain thread life cycle with example?   6M
    b) Show how to create user defined exceptions and handle them in java?   6M
UNIT-V
10. a) Explain the creation and manipulation of menus.   6M
    b) Write a program to implement key event handling?   6M
    (OR)
11. a) What is the role of event listeners in event handling? List the Java event listeners? 6M
    b) Write a java program to create two buttons naming as CSE, IT using applets? 6M

CSE	IT