AR16

CODE: 16OE2021   **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
II B.Tech II Semester Supplementary Examinations, July- 2018
TRANSFORM THEORY

Time: 3 Hours   **MaxMarks: 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 $Z(n^2) = \frac{z^2+z}{(z-1)^3}$ **7M**

    b) Find the values of $Z(\cos n\theta)$ and $Z(sinn\theta)$ **7M**

(OR)

2. If $Z(u_n) = \frac{2z^2+4z+12}{(z-1)^4}$, find u_2 and u_3 **14M**

UNIT-II

3. a) Find $Z^{-1}[\frac{z}{z^2+11z+24}]$ **7M**

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

(OR)

4. a) Find $Z^{-1}[\frac{z+1}{z^2-3z+2}]$ **7M**

    b) Using Convolution Theorem, evaluate $Z^{-1}[\frac{1}{n!} * \frac{1}{n!}]$ **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 cosine transform of $e^{-a^2x^2}$ and hence evaluate Fourier sine transform   **14M**
    of $x\,e^{-a^2x^2}$.

UNIT-IV

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

    $\int_{-\infty}^\infty \frac{sinapcospx}{p}\,dp$ and $\int_0^\infty \frac{sinp}{p}\,dp$

(OR)

8   Using Parseval's identity, show that $\int_0^\infty \frac{dx}{(x^2+a^2)(x^2+b^2)} = \frac{\pi}{2ab(a+b)}$ **14M**

UNIT-V

9. Solve the difference equation, using Z-transform $y(n+2) + 3y(n+1) + 2y(n) = 0$,   **14M**
    given $y(0) = 0, y(1) = 1$

(OR)

10. Solve the difference equation, using Z-transform $y(n+2) - 5y(n+1) + 6y(n) =$ **14M**
    5^n, given $y(0) = 0, y(1) = 1$

AR16

CODE: 16OE2022   **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
II B.Tech II Semester Supplementary Examinations, July- 2018

FUNDAMENTALS OF BUILDING PLANNING
(OPEN ELECTIVE - II)

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

INSTRUCTIONS:
- Question paper consists of Five Questions from respective units with internal choice.
- Each question carries 14 Marks   **(5X14M=70M).**

Answer all five questions selecting **one question from each unit**.

UNIT-I
1. a) Explain different types of sanitary fixtures?   6M
   b) Explain manufacturing of bricks?   8M

(OR)

2. a) Explain the characteristics of timber?   8M

   b) Explain any four modern building materials.   6M

UNIT-II
3. a) What are the minimum standards or requirements of a staircase?   6M
   b) What are the requirements of parts of a residential building? Explain them   8M

(OR)

4. a) Explain the characteristics of various types of residential buildings?   8M
   b) What are the minimum standards or requirements of varandah?   6M

UNIT-III

5. a) Explain different types of doors and its components with neat sketches?   8M
   b) Explain different types of windows with neat sketches?   6M

(OR)

6. a) Explain advantages and disadvantages of shell roof?   6M
   b) What is brick masonry? Describe briefly about bonds in brick masonry with neat   8M
      sketches

UNIT-IV

7.   a) Explain about floor area ratio and floor space index?   6M

      b) Explain the classification of buildings?   8M

(OR)
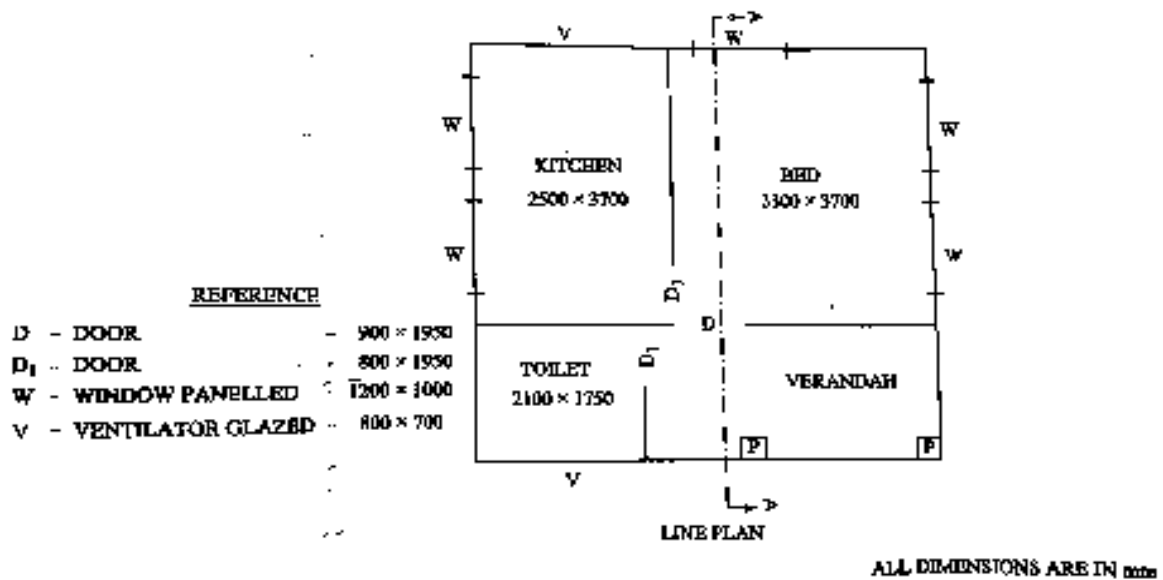
8.   a) What are building byelaws? Explain the objectives of building byelaws?   8M

      b) Explain about height of the building?   6M

UNIT-V

9.   Draw the plan and section of a given line diagram of residential building.   14M

(OR)

10.   Draw the   Section and elevation of a given line diagram of residential building   14M

KITCHEN
2500 × 3700

BED
3300 × 3700

REFERENCE

D – DOOR   – 900 × 1950
D₁ – DOOR   – 800 × 1950
W – WINDOW PANELLED – 1200 × 1000
V – VENTILATOR GLAZED – 800 × 700

TOILET
2100 × 1750

VERANDAH

LINE PLAN

ALL DIMENSIONS ARE IN mm

***

AR16

CODE: 16OE2023   **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
II B.Tech II Semester Supplementary Examinations, July- 2018
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.	Explain the instruments in detail for the measurement of Solar radiation with diagrams.	**14M**

(OR)

2.	a)	Define Solar Constant and explain the factors on which it depends?	**8M**
	b)	Explain about the Beam and Diffuse radiation.	**6M**

UNIT-II

3.	a)	Briefly explain cylindrical parabolic concentrator	**7M**
	b)	Describe the principle of solar photovoltaic energy conversion.	**7M**

(OR)

4.	What are different applications of solar energy? Briefly mention the advantages and disadvantages of each one.	**14M**

UNIT-III

5.	Explain wind energy conversion systems and classify different types of wind mills.	**14M**

(OR)

6.	a)	What are the advantages and disadvantages of wind energy conversion systems	**7M**
	b)	Explain in detail about anaerobic digestion.	**7M**

UNIT-IV

7.	a)	What are the different types of wells in geothermal energy? How they are used?	**8M**
	b)	Explain wave energy conversion technique in detail with neat layout diagrams	**6M**

(OR)

8.	Explain the closed cycle OTEC System, with its advantages over open cycle system	**14M**

UNIT-V

9.	Write short note on i) Hall effect ii) Seebeck effect iii) Peltier and Joul Thomson effects	**14M**

(OR)

10.	a)	Explain the principle of MHD power generation.	**7M**
	b)	Write short note on Faraday's laws.	**7M**

AR16

CODE: 16OE2024   SET-1

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
II B.Tech II Semester Supplementary Examinations, July- 2018

PRINCIPLES OF MECHANICAL MEASUREMENTS

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. Distinguish between the following.   **4+3+4+3**
   i. Accuracy and precision
   ii. Resolution and Threshold
   iii. Reproducibility and repeatability
   iv. Dead zone and Hysteresis

                            (OR)

2. Explain the following terms: **5+5+2+2**
   i. Speed of response
   ii. Sensitivity
   iii. Dead time
   iv. Dead Zone

UNIT-II

3. Describe the construction, working and theory of Bourdon tube for measurement of pressures?   **14**

                            (OR)

4. Explain the working of ultrasonic flow meters. Explain the different techniques used for measurement of flow velocity. What are the advantages and disadvantages of these flow meters?   **14**

UNIT-III

5. What is thermocouple? With a neat sketch explain its construction, working principle and applications.   **14**

                            (OR)

6. Explain working of gas filled thermometer with neat sketches?   **14**

UNIT-IV

7. Describe in detail the construction and working of an inductive and a capacitive transducers to measure linear displacement.   **14**

                            (OR)

8. Differentiate between resistive, inductive, capacitance type transducers?   **14**

UNIT-V

9. Explain principle and working of proving ring and its applications?   **14**

                            (OR)

10. Describe in detail the construction and working of dynamo meter?   **14**

AR16

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
II B.Tech II Semester Supplementary Examinations, July- 2018
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)	What is a signal and explain different types of signals	10M
	b)	What are the basic constitutents of a communication systems	4 M

(OR)

2.	a)	Explain the below properties of Fourier Transform
		   i) Linearity ii) Time Scaling iii) Time Shifting
		   iv) Time convolution theorem v) Frequency convolution theorem
			10 M

	b)	What are the important sources of information in communication environment	4 M

UNIT-II

3.	a)	Draw and explain the block diagrams of low level AM modulation and High level AM modulation	7 M
	b)	A 400 walts carrier is modulated to a depth of 75% find the total power in the amplitude-modulation wae. Assume the modulating signal to be a sinusoidal one.	7 M

(OR)

4.	a)	Explain about narrow band and wide band FM	10 M
	b)	Compare frequency modulation and phase modulation	4 M

UNIT-III

5.	a)	State and prove samplng theorem	10 M
	b)	Compare PWM and PPM	4 M

(OR)

6.	a)	Explain the concept of multiplexing in detail	7 M
	b)	Explain PAM with neat diagram	7 M

UNIT-IV

7.	a)	Explain about ADPCM with neat diagram	10 M
	b)	Describe about the performance of ADPCM	4 M

(OR)

8.		Explain the following digital modulation techniques with neat wave forms i) FSK II) PSK	14 m

UNIT-V

9.	a)	Explain the concept of information and source coding for optimum rate of information	10 M
	b)	Explain about the rate of information and entropy	4 M

(OR)

10.		Explain Huffman code in detail with an example	14 M

AR16

CODE: 16OE2026   **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
II B.Tech II Semester Supplementary Examinations, July- 2018
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.	List and explain any java buzzwords? Which factors are making java famous language?	**14M**

(OR)

2.	a)	What is an object oriented programming? Explain principals of OOPs?	**7M**
	b)	Define an array? Write a java program to transpose of matrix.	**7M**

UNIT-II

3.	a)	What is Method Overloading? Explain Method Overloading with an example?	**7M**
	b)	Write a java program to illustrate "Constructor Overloading".	**7M**

(OR)

4.	a)	Write syntax for defining a class and how to access members of class through object explain with suitable example.	**10M**
	b)	List the various ways of 'static' keyword usage.	**4M**

UNIT-III

5.	Define inheritance. What are the benefits of inheritance? Explain various forms of inheritance with suitable examples	**14 M**

(OR)

6.	a)	What is dynamic method dispatch? Write a Java program to demonstrate dynamic method dispatch	**7M**
	b)	What is an interface? What is its use? Write a Java program to demonstrate implementing, applying, and extending an interface.	**7M**

UNIT-IV

7.	a)	Explain user defined exceptions with suitable example?	**7M**
	b)	Discuss the key terms "throw" and "throws". Give suitable examples, which show how to use them.	**7M**

(OR)

8.	List and explain the five keywords associated with exception handling in detail.	**14M**

UNIT-V

9.	a)	What is thread? Explain the life cycle of the thread?	**7M**
	b)	"Threads can be given priorities" - Support this statement with suitable example.	**7M**

(OR)

10.	What are the two ways to create the thread? explain with suitable example	**14M**

AR16

CODE: 16OE2027   **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
II B.Tech II Semester Supplementary Examinations, July- 2018
INTRODUCTION TO PYTHON

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)	Explain the features of python	**7M**
	b)	What is a variable? Explain data types in python	**7M**
		(OR)	
2.	a)	What is an identifier? Explain operators in python	**9M**
	b)	Explain the history of python	**5M**

UNIT-II

3.	a)	Explain different Control Structures in python with examples	**10M**
	b)	Write a program to print factorial value of given integer	**4M**
		(OR)	
4.	a)	Write a program to print prime numbers up to given range	**7M**
	b)	Write a program to print amstrong numbers up to given range	**7M**

UNIT-III

5.	a)	What is a string? Explain different string operations in python	**7M**
	b)	Explain the differences between strings and lists and also explain list operations	**7M**
		(OR)	
6.	a)	What is a set? Explain different set operations in python	**7M**
	b)	What is a function? Explain the built-in functions with examples	**7M**

UNIT-IV

7.	a)	Explain the differences between error and exception with one example	**7M**
	b)	Explain exception handling mechanism with one example	**7M**
		(OR)	
8.	a)	What is a file? Explain file operations in python	**7M**
	b)	Explain different types of exceptions in python	**7M**

UNIT-V

9.	a)	What is an inheritance? Explain inheritance mechanism with one example.	**7M**
	b)	What is a class? Explain overloading mechanism with one example.	**7M**
		(OR)	
10.	a)	Explain the object oriented programming concepts	**7M**
	b)	Write a program to implement object oriented programming concepts	**7M**

AR16

CODE: 16OE2028   SET-1

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
II B.Tech II Semester Supplementary Examinations, July- 2018
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 u = e^{-x} (x sin y – y cosy) is harmonic?   **7M**

    b   If $f(z)$ is a regular function of z, prove that $(\frac{\partial^2}{\partial x^2} + \frac{\partial^2}{\partial y^2})|f(z)|^2 = 4.|f^I(z)|^2$ **7M**

(OR)

2. Using Milne - Thompson method, find the analytic function whose real part is   **14M**
    $$e^{2x}(x \cos 2y - y \, Sin2y)$$

UNIT-II

3. Evaluate $\int_C (x - 2y)dx + (y^2 - x^2)dy$ where C is the boundary of the first quadrant of   **14M**
    the circle $x^2 + y^2 = 4$

(OR)

4. Evaluate $\int_C \frac{z^3 e^{-z}}{(z-1)^3} \, dz$, where $C: |z - 1| = \frac{1}{2}$ using Cauchy's integral formula   **14M**

UNIT-III

5.   **14M**

    Find the Laurent series expansion of the function $\frac{7z-2}{(z+1)z(z-2)}$ about the point z= -1 in the
    region 1< |z+1| <3

(OR)

6   a   Define Singular point-isolated singularity- essential singularity   **7M**

    b   Expand $f(z) = \frac{e^{2z}}{(z-1)^3}$ about z=1 as a Laurent'sseries. Also find the region of   **7M**
        convergence.

UNIT-IV

7. Evaluate $\int_C \frac{z-3}{z^2+2z+5} dz$ where C is the circle given by i) $|z + 1 - i| = 2$ **14M**
    ii)$|z + 1 + i| = 2$ using Residue Theorem.

(OR)

8. a) find the poles and residues at each pole of $f(z) = \frac{z}{z^2+1}$ **7M**

    b)Using residue theorem, evaluate $\int_C \frac{2z-1}{Z(z+2)(2z+1)} \, dz$ where c is the circle $|z| = 1$ **7M**

UNIT-V

9.   **14M**

    Evaluate $\int\limits_0^\infty \frac{dx}{\left(x^2 + a^2\right)^2}$

(OR)

10 Using complex variable technique evaluate $\int_0^{2\pi} \frac{sin^2\theta}{a+b \, cos\theta} d\theta$ where a>b>0   **14M**

1 of 1
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AR16

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 gdd of 275 and 200   **7M**
    b . Express 275 and 200 in the form of m.275 + n.200   **7M**

(OR)

2. a. Obtain sum of divisors of 360   **7M**
    b. Number of divisors of 360   **7M**

UNIT-II

3. Show that $8^n - 3^n$ is divisible by 5   **14M**

(OR)

4. Solve the congruence $98x \equiv 1 \ (Mod \ 139)$ **14M**

UNIT-III

5. Define Euler-Fermate theorm . Hence, Show that $n^{18} - a^{18}$ is divisible by 133 if n and a   **14M**
    are co-prime to 133.

(OR)

6   Obtain all integers that leave remainders 1 or 2when they are divided by each of 3, 4 and 5.   **14M**

UNIT-IV

7.   Define Mobius function μ. Determine $\mu(13), \mu(30)$ **14M**

(OR)

8.   Define Euler Totient Function Φ. Determine $\Phi(50)$ **14M**

UNIT-V

9.   Evaluate (73/383) and (17/223)   **14M**

(OR)

10. Determine whether -104 is quadratic residue of 997 or not   **14M**

AR13

CODE: 13CE2009   **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
II B.Tech II Semester Supplementary Examinations, July- 2018

CONCRETE TECHNOLOGY
(Civil Engineering)

Time: 3 Hours   Max Marks: 70

PART-A

ANSWER **ALL QUESTIONS**   **[1 x 10 = 10 M]**

1. a) Define setting time of cement.
   b) What is admixture?
   c) Define slump in concrete.
   d) How aggregates are classified based on shape?
   e) What is meant by alkali aggregate reaction?
   f) What is bleeding?
   g) State Abram's law.
   h) Define creep of concrete.
   i) What is meant by curing of concrete?
   j) Define characteristic strength of concrete

PART-B

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

UNIT-I

2. a) Explain dry process of manufacturing the cement with neat diagram. Explain advantages over the wet process?   6M
   b) Briefly write about any three physical properties of Portland cement and name the tests to determine them?   6M

(OR)

3. a) What are super plasticisers? How are these helpful in modifying the properties of cement?   6M
   b) What are the different types of admixture? Write about flyash and silica fume   6M

UNIT-II

4. a) Explain Alkali aggregate reaction highlighting the mechanism of deterioration, factors affecting it and methods to avoid it?   6M

     b) Write about bulk density and moisture absorption of aggregates?   6M

(OR)

5. a) Explain the test procedure for finding the workability of concrete using compaction factor test apparatus   6M

     b) Explain the steps in the manufacture of concrete?   6M

UNIT-III

6. a) Explain about Gel-Space Ratio   6M

     b) Explain the various methods of curing for concrete   6M

(OR)

7. a) Explain the test procedure to finding out the flexural strength of concrete   6M

     b) What are the different NDT tests?   6M

UNIT-IV

8. a) What is the relation between creep and time?   6M

     b) What are the different factors affecting shrinkage of concrete?   6M

(OR)

9. a) What are the different types of shrinkage?   6M

     b) Write a brief note on factors affecting modulus of elasticity.   6M

UNIT-V

10. Design a concrete mix for characteristic strength of 30MPa at 28 days with a standard deviation of 5MPa.The specific gravity of FA and CA are 2.6 and 2.7 respectively. A slump of 40mm is necessary. The specific gravity of cement is 3.15. Assuming the necessary data, design the mix as per IS code method?   12M

(OR)

11. Describe in detail I.S. method for mix design   12M

AR13

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
II B.Tech. II Semester Supplementary Examinations, July- 2018

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) Give examples of mechanical components that fail by fracture
   b) What is goodmann line
   c) What is lozenge joint and where does it find applications
   d) What is the cause of residual stresses in welded joint
   e) What is bolt of uniform strength
   f) What is the criterion to distinguish between thin and thick cylinders
   g) How does the working of clamp coupling differ from that of muff coupling
   h) What are elements of keyed joint
   i) What is torsional rigidity in shaft
   j) What are inactive coils in spring

PART-B

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

UNIT-I

2. a) What are advantages of forging process? Briefly state consideration for forging design   4M
   b) Explain any four theories of failure.   8M

(OR)

3. A pulley is keyed to the shaft midway between two anti friction bearings. The bending moment between at the pulley varies from -170N-m to 10N-m and the torsional moment varies from 55N-m to 165N-m . The shaft is made of cold drawn steel having an ultimate strength of 540MPa and a yield strength of 400MPa. Determine the required diameter for an indefinite life.The stress concentration factor for the keyway in bending and torsion may be taken as 1.6 and 1.3 respectively. The factor of safety is 1.5 . Take size factor =0.85 and surface finish factor=0.88   12M

UNIT-II

4. a) Show by neat sketches the various ways in which a riveted joint may fail   4M
   b) Find the efficiency of the following riveted joints : 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.   8M

(OR)

5. a) What are the advantages of welded joints compared with riveted joint   4M
   b) Determine the length of the weld run for a plate of size 120mm wide and 15mm thick to be welded to another plate by means of
   i). A single transverse weld ii).Double parallel fillet welds when the joint is subjected to variable loads.   8M

6. A steam engine cylinder has an effective diameter of 200mm. It is subjected to a   12M
maximum steam pressure of 1.5 MPa. The cylinder cover is fixed to the cylinder
flange by means of 12 studs. The pitch circle diameter of the studs is 400mm. The
permissible tensile stress in the studs is limited to 30N/mm^2
    i) Determine the nominal diameter of the studs if d_c = 0.84d
    ii) Calculate the circumferential pitch of the studs

(OR)

7. a) Define auto frettage. What are the methods for pre stressing the cylinder?   4M
    b) A tube with 50mm and 75mm as inner and outer diameters respectively, is   8M
reinforced by shrinking a jacket of outer diameter 100mm. The compound tube is
to withstand an internal pressure of 35MPa. The shrinkage allowance is such that
the maximum tangential stress in each tube has same magnitude. Calculate
    i) The shrinkage pressure ii) The original dimensions of tubes show the
distribution of stresses. Take E= 207 kN/mm^2

UNIT-IV

8. a) It is required to design a square key for fixing a pulley on the shaft, that is 50mm in   4M
diameter. The pulley transmits 10kW power at 200 rpm to the shaft. The key is
made of steel 45C8 ($S_{yt} = S_{yc} = 380$N/mm^2) and the factor of safety is 3. Determine
dimensions of the key.
    b) It is required to design a knuckle joint to connect two circular rods subjected to an   8M
axial tensile force of 50kN. The rods are co-axial and a small amount angular
movement is permissible. Design the joint and specify the dimensions of its
component. Select suitable material for parts using data book

(OR)

9. A horizontal nickel steel shaft rests on two bearings A at the left end B at the right   12M
end and carries two gears C and D located at distances of 20mm and 400mm
respectively from the centre line of the left and right bearings. The pitch diameter
of the gear Cis 600mm and that of gear D is 200mm. The distance between the
centre line of the bearings is 2400mm. The shaft transmits 20kW at 120 r.p.m. The
power is delivered to the shaft at gear C and is taken out at gear D in such a
manner that the tooth pressure F_{tc} of the gear C and F_{td} of the gear D act vertically
downwards. Find the diameter of the shaft if the working stress is 100MPa in
tension and 56MPa in shear. The gears C and D weighs 950N and 350N
respectively. The combined shock and fatigue factors in bending and torsion may
be taken as 1.5 and 1.2 respectively.

UNIT-V

10. a) It is required to design a rigid type of flange coupling to connect two shafts. The   4M
input shaft transmits 37.5kW power at 180 rpm to the out put shaft through the
coupling. The service factor for the application is 1.5 . Select suitable materials
for various parts of coupling. Design the coupling and specify the dimensions of
component
    b) Explain nipping briefly   8M

(OR)

11. A semi elliptic leaf spring consist of two extra full length leaves and including the   12M
master leaf. Each leaf is 7.5 mm thick and 0mm wide. The centre to centre
distance between the two eyes is 1m. The leaves are pre stressed in such a way
that when the load is maximum stresses induced in all the leaves are equal to
350N/mm^2 . Determine the maximum force that it can withstand.

AR13

SET-2

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
II B.Tech II Semester Supplementary Examinations, July- 2018
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) Represent a class with diagram.
    b) What is casting?
    c) What is an object?
    d) What is a constructor?
    e) What is the role of constructor in Inheritance?
    f) What is a variable?
    g) Define synchronization.
    h) What is Daemon thread?
    i) List the various event listeners
    j) What are Scroll Panes?

PART-B

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

UNIT-I

2. a) Explain the Object Oriented Concepts in JAVA.   **6M**
   b) What is object? Explain the process of accessing class members using object?   **6M**

(OR)

3. a) What are the various data types used in Java, explain with example.   **6M**
   b) Explain how operators are declared in Java with example.   **6M**

UNIT-II

4. a) Explain constructor overloading with an example   **6M**
   b) Explain "super" keyword with an example.   **6M**

(OR)

5. a) How is access control implemented in Java?   **6M**
   b) What is recursion? Explain with an example how recursion is implemented in Java **6M**

UNIT-III

6. a) What is Package? Explain how to use interface in a class with an example.   **6M**
   b) What is class path? How is it identified?   **6M**

(OR)

7. a) What is method overriding? Explain with example   **6M**
   b) Where and how are interfaces applied?   **6M**

UNIT-IV

8. a) What is an Exception? Explain the Exception Handling mechanism.   **6M**
    b) Explain Thread-Life Cycle   **6M**

(OR)

9. a) Explain with example how user define exception can be created.   **6M**
    b) What is inter-thread exception? Explain.   **6M**

UNIT-V

10. a) Explain the various types of AWT components with syntax.   **6M**
    b) Explain how to invoke a file dialogue using Action Listener interface.   **6M**

(OR)

11. a) Explain Image class and how to use it in applets   **6M**
    b) Write a program which illustrates the usage of different Layouts in Swings   **6M**