



SANSKRITHI SCHOOL OF ENGINEERING, PUTTAPARTHI

IV B. Tech I Semester II Mid-Term Examination (2021-22): Descriptive

Branch: CSE

Sub: INFORMATION SECURITY

Sub Code: 15A05702

Time: 90 Minutes

Date: 01-02-2022

Max marks: 30

Answer any three questions. All questions carry equal marks 3*10=30

- | | | |
|--|-----|----|
| 1) A) Explain in detail about SHA Algorithm? | CO3 | L2 |
| B) Describe in detail about HMAC? | CO3 | L2 |
| 2) A) Explain in detail about Kerberos? | CO4 | L2 |
| B) Describe in detail about public key infrastructure? | CO4 | L2 |
| 3) A) Write about message Authentication Requirements? | CO5 | L1 |
| B) Explain about message Authentication functions? | CO5 | L2 |
| 4) A) Write short notes on S/MIME? | CO5 | L1 |
| B) Write Short Notes on Pretty Good Privacy and User Authentication? | CO5 | L1 |
| 5) A) What is SSL? Explain about SSL Protocols? | CO3 | L2 |
| B) Define terms i) TLS ii) HTTPS iii) SSH? | CO3 | L1 |



SANSKRITHI SCHOOL OF ENGINEERING, PUTTAPARTHI

IV B. Tech I Semester II Mid-Term Examination (2021-22): Descriptive

Branch: CSE

Sub: INFORMATION SECURITY

Sub Code: 15A05702

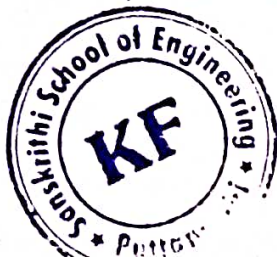
Time: 90 Minutes

Date: 01-02-2022

Max marks: 30

Answer any three questions. All questions carry equal marks 3*10=30

- 1) A) Explain in detail about SHA Algorithm?
B) Describe in detail about HMAC?
- 2) A) Explain in detail about Kerberos?
B) Describe in detail about public key infrastructure?
- 3) A) Write about message Authentication Requirements?
B) Explain about message Authentication functions?
- 4) A) Write short notes on S/MIME?
B) Write Short Notes on Pretty Good Privacy and User Authentication?
- 5) A) What is SSL? Explain about SSL Protocols?
B) Define terms i) TLS ii) HTTPS iii) SSH?



Principal
Principal
Sanskriti School of Engineering
Beedupalli Road, Prasanthnagar,
PUTTAPARTHI - 515 134.
Anantapuramu (Dt) A.P.

Answer Any Three Questions. All Questions carry equal marks

- | | | |
|---|-----|----|
| 1) A) Explain in detail about play fair cipher with example? | CO1 | L2 |
| B) Plain text is "INFORMATION" and the key is 4 to find out encryption and decryption using Caesar cipher? | CO1 | L3 |
| 2) A) Explain in detail about OSI Security architecture? | CO2 | L2 |
| B) Explain in detail about transposition cipher? | CO2 | L2 |
| 3) A) Describe in details about security attacks? | CO1 | L2 |
| B) Explain in detail about symmetric cipher model? | CO1 | L2 |
| 4) A) what is block cipher and write principles of block ciphers? | CO2 | L1 |
| B) define terms i) encryption algorithm ii) decryption algorithm iii) secret key iv) information Security v) security mechanism | CO2 | L1 |
| 5) A) Explain Euclidean algorithm with example? | CO1 | L2 |
| B) Explain in detail about modular arithmetic? | CO1 | L2 |




Principal
Sanskriti School of Engineering
Beedupalli Road, Prossanthiagram,
PUTTAPARTHI - 515 104.
Anantapuramu (Dt) A.P.

Answer any three questions. All questions carry equal marks (3x10=30 marks)

- 1.(a) Explain the principle of operation of MTI radar with power oscillator transmitter with a neat block diagram?
L2 Co3 L2
- (b) Discuss about blind speeds? L2
2. Explain the operation of amplitude comparison monopulse tracking radar with the help of a block diagram?
Co4 L2 Co4 L2
3. Establish the impulse response characteristic for a matched filter? Co5 L1
4. With a neat diagram explain the operation of a conical scan Radar. Explain the various factors that need to be considered for optimum squint angle? Co4 L2
5. (a) Explain the basic concept of phased array antennas? Co5 L2
- (b) Explain characteristics of different radar displays? L2



(Signature)
Principal
Sanskriti School of Engineering
Beedupalli Road, Prosenithingram,
PUTTAPARTHI - 515 134.
Anantapuramu (Dt) A.P.

Answer any three questions. All questions carry equal marks (3x10=30 marks)

- | | | |
|--|-----|----|
| 1. Explain about Radar block diagram and operation? | Co1 | L2 |
| 2. (a) Derive the basic radar range equation?
(b) List out and explain any two system losses | Co2 | L5 |
| 3. Explain about receiver bandwidth requirements in CW radar? | Co2 | L2 |
| 4. Discuss probability of false alarm and probability of detection with necessary equations? | Co1 | L2 |
| 5. (a) Explain range and doppler measurement in FM-CW radar?
(b) Explain FM-CW Radar Block diagram? | Co1 | L2 |




Principal
Sanskriti School of Engineering
Beedupalli Road, Prasanthnigram,
PUTTAPARTHI - 515 134.
Anantapuramu (Dt) A.P.



SANSKRITHI SCHOOL OF ENGINEERING, PUTTAPARTHI

IV B. Tech I Semester II Mid-Term Examination (2021-22): Descriptive Type

Branch: Mechanical

Sub:AE

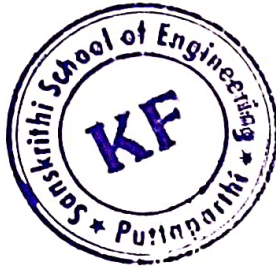
Sub Code:15A03701 Max marks: 30

Time: 90 Minutes

Date:

Answer any three questions. All questions carry equal marks.(3*10 = 30)

- | | | |
|--|-----|----|
| 1. Discuss in details the Ackerman steering system | Co3 | L2 |
| 2. Draw a simple diagram to show the layout of drum and disk brake system | Co4 | L1 |
| 3. discuss the details the basic suspension system and universal joint | Co5 | L2 |
| 4. Explain about Hotch kiss and epicyclic gear box | Co3 | L2 |
| 5. Explain about steering geometry. 1) camber 2) castor 3) Toe in and to Toe out | Co5 | L2 |



C. S. Jyothi
Principal
Sanskriti School of Engineering
Beedupalli Road, Prasanthnigram
PUTTAPARTHI - 515 134.
Anantapuramu (Dt) A.P.



SANSKRITHI SCHOOL OF ENGINEERING, PUTTAPARTHI

IV B. Tech I Semester I Mid-Term Examination (2020-21): Descriptive

TypeBranch:Mechanical

Sub:AE

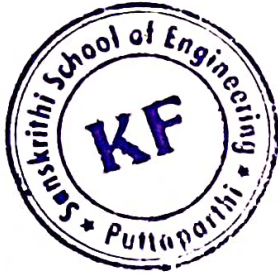
Sub Code:15A03701 Max marks: 30

Time: 90 Minutes

Date:

Answer any three questions. All questions carry equal marks.(3*10 = 30)

1. With the help of a neat sketch explain the construction and working of a multiplate clutch.L2 Co1 L2
2. What is chassis? What are the components of a chassis? Indicate their function sCo2 L2
3. With the help of a neat sketch explain splash lubricating system Co1 L2
4. Draw schematic diagram, showing the layout of complete transmission system of a four wheeler automobile. Co1 L1
5. What is the function of propeller shaft? Briefly the construction of propeller shaft Co2 L3



[Signature]
Principal
Sanskriti School of Engineering
Beedupalli Road, Prasanthi, Puttaparthi
PUTTAPARTHI - 515 134.
Anantapuramu (DI) A.P.



SANSKRITHI SCHOOL OF ENGINEERING, PUTTAPARTHI

4TH B. Tech I Semester - II Mid-Term Examination (2021-22): Objective

Branch: EEE

Sub: PSOC

Sub Code: 15A02502

Time: 20 Minutes

Max marks: 10

NAME:

HT N

Invigilator Signature:

--	--	--	--	--	--	--	--	--	--

ANSWER THE FOLLOWING QUESTIONS. EACH QUESTIONS CARRY ½ MARK. (20x½ = 10 Marks)

1. Two main controlling loops in generating stations are []
a) ALFC b) AVR c) Both a & b d) None
2. The frequency is normally varying about _____ between light and full load []
a) 10% b) 5% c) 4% d) 2%
3. If two areas were interconnected the steady state frequency error is []
a) Reduced by 50% b) reduced by 25% c) increased by 50% d) increased by 25%
4. When an inter connected power system operates with a tie-line bias they will respond to []
a) frequency changes only b) both frequency & tie line load changes c) tie line load changes only d) none
5. For a two area system the damping of frequency is high with []
a) high R b) low R c) R=alpha d) none
6. Sub-synchronous resonance is considered as _____ type of phenomenon []
a) electrical b) mechanical c) electrical & mechanical d) damped frequency resonance
7. Zero steady state error in frequency is obtained by []
a) Proportional controller b) integral controller c) proportional plus integral controller
d) adding a capacitor in any phase
8. Load frequency control is achieved by proper matching of the individual machines []
a) Reactive powers b) generated voltages c) turbine inputs d) turbine and generator ratings
9. The power system is stable if []
a) The synchronizing power coefficient is positive b) The synchronizing power coefficient is negative
c) The synchronizing power coefficient is positive or negative d) none
10. Which of the VAR compensators can be used for both heavy and light load conditions []
a) SVC b) shunt capacitor c) shunt reactor d) series capacitor
11. Shunt capacitor compensation at load bus []
a) improves system frequency b) improves system voltage
c) reduces Ferranti effect d) absorbs reactive power
12. The changes in Reactive power at a bus have a great effect on the voltage magnitude []
a) of that bus b) of all the bus c) of distant buses d) none of the above
13. For a good voltage profile under load condition a long line needs []
a) shunt capacitors at receiving end b) shunt reactors at receiving end
c) shunt resistance at receiving end
14. For a good voltage profile under no load condition a long line needs []
a) shunt capacitors at receiving end b) shunt reactors at receiving end
c) shunt resistance at receiving end
15. Difference between spot price & future price at any specified time is []
a) short term price b) basis c) market clearing price d) basis risk
16. The range of substitutes for its commodities are more in _____ demand []
a) inelastic demand b) elastic demand c) both a & b d) none
17. Deterioration in the cost of electricity generating resources due to restructuring of power industry is known as a) power exchange b) stranded cost c) transmission pricing d) market power []
18. _____ assures the stability of power system and the quality of the service []
a) power exchange b) ISO c) both a & b d) none
19. The congestion which primarily occurs on transmission interfaces between congestion zones is known as _____ []
a) inter zonal b) intra zonal c) congestion revenue d) none
20. Objective of market operation []
a) secure operation b) economic operation c) both d) none



Ushanta
Principal
Sanskriti School of Engineering
Beedupalli Road, Press
PUTTAPARTHI - 522202
Anantapur District



SANSKRITHI SCHOOL OF ENGINEERING, PUTTAPARTHI

4th B. Tech I Semester – II Mid–Term Examination (2021-22): Descriptive

Sub: PSOC

SET-1 Branch: EEE

Time: 90 Minutes

Sub Code: 15A02702

Max marks: 30

Answer any three questions. All questions carry equal marks (3X10 =30 marks)

- | | | |
|---|-----|----|
| 11. With a neat block diagram explain the load frequency control with economic dispatch control. | CO3 | L2 |
| 2. Draw the block diagram of proportional plus integral controller and show the steady state frequency error? | CO4 | L2 |
| 3. Explain the load frequency control of two-area interconnected by a Tie line with a neat block diagram. | CO5 | L2 |
| 4. List out different reactive power compensation device . Explain briefly about them. | CO4 | L2 |
| 5.(a) Explain the concept of inter zonal/intra zonal congestion management with example? | CO5 | L2 |
| b) Explain the role and objectives independent system operator? | | |



(Signature)
Principal
Sanskriti School of Engineering
Beedupalli Road, Prasanthipuram
PUTTAPARTHI - 515 134.
Anantapuramu (A.P.)



SANSKRITHI SCHOOL OF ENGINEERING, PUTTAPARTHI

4TH B. Tech I Semester - I Mid-Term Examination (2021-22): Objective

Branch: EEE

Sub: PSOC

Sub Code: 15A02502

Time: 20 Minutes

Max marks: 10

NAME:

HT NO:

Invigilator Signature:

--	--	--	--	--	--	--	--	--	--

ANSWER THE FOLLOWING QUESTIONS. EACH QUESTIONS CARRY $\frac{1}{2}$ MARK. ($20 \times \frac{1}{2} = 10$ Marks)

- Equality constraints are []
a) Generator constrains b) Current constraints c) Magnetic constraints d) none of the above
- Heat rate curve is defined as []
a) Fuel i/p to the power o/p b) Power o/p to the fuel i/p c) Both d) none of the above
- The penalty factor []
a) Is always less than 1. b) is always more than 1 c) may be more or less than 1 d) is equal to 1 or less than.
- The fuel cost is included in []
a) Annual fixed cost b) Annual operating cost c) Both (a) & (b) d) None
- The cost function of a generating station being a quadratic equation the incremental fuel cost expression []
a) linear b) non linear c) parabolic d) unpredictable
- Which power plant need the least period for installation []
a) diesel power plant b) thermal power plant
c) Nuclear power plant d) hydro-electric power plant
- The largest size of thermal generating unit in India is []
a) 500 MW b) 310 MW c) 210 MW d) 165 MW
- The optimum allocation of generation to each station for system load level is called []
a) Load dispatching b) load scheduling c) Unit commitment d) none
- The main economic factor in power system operation is []
a) The cost of reactive power compensation b) the cost of power generation
c) The cost of operation and maintenance d) the cost of power transmission
- The cost function of generating station being a quadratic equation the incremental fuel cost expression will be []
a) Linear b) non linear c) parabolic d) none
- The units of Incremental cost is []
a) Rs per Mwh b) Rs per Mw c) Rs hour d) Rs
- Hydro plant is example for ----- []
a) Base load b) peak load c) high load d) average load
- When compared to thermal plant the operating cost & capital cost of hydro electric plant is []
a) Low, high b) high, low c) both high d) both low
- The optimum scheduling in case of thermal plants is []
a) static b) dynamic c) both a & b d) either a or b
- In a power system ----- are continually changing []
a) Pg & Qg b) Pd & Qd c) V & delta d) All
- Real power balance will control the variations in []
a) voltage b) frequency c) both d) none
- The objective function to the optimization problem in a hydrothermal system becomes []
a) Minimum fuel cost of thermal plants b) Minimum time of operation []
c) Maximum water availability for hydrogenation d) All of these
- Hydro generation is a function of []
i) Water head ii) Water discharge iii) Rainfall iv) Water inflow
Out of the above a) i & ii are correct b) i, ii, & iv are correct
c) all are correct d) ii & iv are correct
- Hydrothermal coordination is necessary only in countries with []
a) Ample coal resources b) Ample water resources c) Both a & b d) None
- The highest ac transmission ac voltage used in India is []
a) 220Kv b) 400Kv c) 750 Kv d) none



[Signature]
Principal

Sanskriti School of Engineering
Beedupalli Road, Prasanthnagar,
PUTTAPARTHI - 515 035.
Anantapuramu (A.P.)



SANSKRITHI SCHOOL OF ENGINEERING, PUTTAPARTHI

4th B. Tech I Semester – I Mid–Term Examination (2021-22): Descriptive

Sub: PSOC

SET-1 Branch: EEE

Time: 90 Minutes

Sub Code: 15A02702

Max marks: 30

Answer any three questions. All questions carry equal marks (3X10=30 marks)

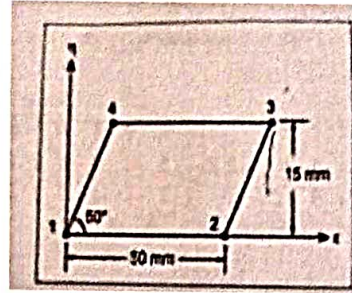
- A constant load 400 MW is supplied by two 210 MW generators 1 and 2 for which fuel cost characteristics are given as below
 $C_1=0.05P_{G1}^2+20P_{G1}+30.0$ Rs./hr
 $C_2=0.06P_{G2}^2+15P_{G1}+40.0$ Rs. /hr
The real power generation of units P_{G1} and P_{G2} are in MW. Determine (i) the most economical load sharing between the generators. (ii) The saving in Rs. per day there by obtain compare to the equal load sharing between two generators. CO1 L3
- A load is feeded by two plants, one is thermal and the other is a hydro – plant. the load is located near the thermal power plant as shown in fig. the characteristics of the two plants are as follows:
 $C_T=0.04P_{GT}^2+30P_{GT}+20$ Rs./hr
 $W_H=0.0012P_{GH}^2+7.5P_{GH}^3/s$
 $\gamma_H=2.5 \times 10^{-5}$ Rs./m³
the transmission loss co-efficient is $B_{22}=0.0015MW^{-1}$. Determine the power generation of both thermal and hydro plants, the load connected when $\lambda=45$ Rs./Mwh CO2 L3
- Explain the following 1. Cost curve 2.heat rate curve 3. Input and output characteristics CO2 L2
- Derive Equation for Economic dispatch of thermal units without losses CO1 L3
- Explain the optimization problem and Derive the equitation of speed governing system CO2 L2



[Signature]
Principal
Sanskriti School of Engineering
Beedupalli Road, Prasanthnagar,
PUTTAPARTHI - 515 134.
Anantapuramu (Dt) A.P.

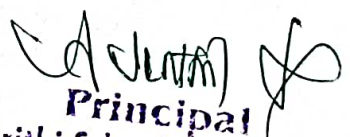
Answer any three questions

1. Derive the Jacobian matrix, strain displacement matrix and stiffness matrix for a 2-D 4-noded iso-parametric quadrilateral element. Co3 L5
2. Consider a quadrilateral element as shown in figure the local coordinates are $\xi = 0.5$ and $\eta = 0.5$, evaluate the jacobian matrix and strain displacement matrix. Co4 L5



3. The nodal co ordinates for an axi symmetric triangular element are given below : Co4 L5
 $r_1 = 20\text{mm}$, $r_2 = 40\text{mm}$, $r_3 = 30\text{mm}$, $z_1 = 40\text{mm}$, $z_2 = 50\text{mm}$, $z_3 = 60\text{mm}$. Evaluate the [B] matrix.
4. a) The nodal co-ordinates of a constant strain triangular element are (in cm); 1(2,2), 2(4,3) and 3(3,6). Derive the strain-displacement matrix. Co5 L5
 b) Derive the strain-displacement matrix and shape functions for a CST element.
5. Explain briefly about the shape functions of 4 node rectangular parent element by using natural co ordinate system & co ordinate transformation. Co3 L2

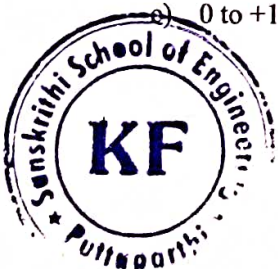



 Principal
 Sanskriti School of Engineering
 Beedupalli Road, Prasanna
 PUTTAPARTHI - 515 003
 Anantapuram (D. A. P.)

--	--	--	--	--	--	--	--	--	--

Answer all questions. Each Questions Carry 0.5 Marks

1. In two dimensional isoparametric elements, we can generate element stiffness matrix by using[]
 a) Numerical integration b) Differential equations c) Partial derivatives d) Undefined
2. The vector $q=[q_1, q_2, \dots, q_8]^T$ of a four noded quadrilateral denotes []
 a) Load vector b) Transition matrix c) Element displacement vector d) Constant matrix
3. For a four noded quadrilateral, we define shape functions on _____ []
 a) X direction b) Y direction c) Load vector d) Master element
4. The master element is defined in _____ []
 a) Co-ordinates b) Natural co-ordinates c) Universal co-ordinates d) Radius
5. Shape function can be written as _____ []
 a) $N_t=(1-\xi)(1-\eta)$ b) $N_t=(1-\xi)$ c) $N_t=(1-\eta)$ d) $N_t= \frac{1}{4} (1-\xi)(1-\eta)$
6. In mathematical modelling of a process, which option is not a characteristic of an analytical solution?
 a) Mathematical equations are used to describe a process []
 b) Most practical problems cannot be solved
 c) Exact information on the quantities of interest is obtained
 d) Finite element method is used
7. For a four noded quadrilateral elements, in $u^T=[u, v]^T$ the displacement elements can be represented as $u=N_1q_1+N_2q_3+N_3q_5+N_4q_7$ $v=N_1q_2+N_2q_4+N_3q_6+N_4q_8$ then the shape can be represented as _ []
 a) $N = \begin{bmatrix} q_1 & q_5 \\ q_2 & q_6 \\ q_3 & q_7 \\ q_4 & q_8 \end{bmatrix}$ b) $N = \begin{bmatrix} q_1 & q_3 & q_5 & q_7 \\ q_2 & q_4 & q_6 & q_8 \end{bmatrix}$ c) $N = \begin{bmatrix} q_1 \\ q_2 \end{bmatrix}$ d) $N = \begin{bmatrix} N_1 & 0 & N_3 & 0 & N_5 & 0 & N_7 \\ 0 & N_2 & 0 & N_4 & 0 & N_6 & 0 \end{bmatrix}$
8. The stiffness matrix from the quadrilateral element can be derived from _____ []
 a) Uniform energy b) Strain energy c) Stress d) Displacement
9. For four noded quadrilateral element, the global load vector can be determined by considering the body force term in _____ []
 a) Kinetic energy b) Potential energy c) Kinematic energy d) Temperature
10. Eight-node Quadrilateral. This element belongs to the _____ family of elements. []
 a) Serendipity b) Constant matrix c) Load vector d) Master element
11. N_1 , is of the form _____ []
 a) Co-ordinates b) $N_1=c(1-\xi)(1-\eta)(1+\xi+\eta)$ c) $N_1=(1-\xi)(1-\eta)$ d) $N_1=(1-\xi)$
12. Six node triangular elements is also known as _____ []
 a) Triangle b) Quadratic triangle c) Interpolation d) Shape function
13. In six node triangular element, the gauss points of a triangular element can be defined by ____ []
 a) Two point rule b) Three point rule c) One point rule d) Undefined
14. The nodal temperature load can be evaluated by using _____ []
 a) Uniform energy b) Strain energy c) Numerical Integration d) Displacement
15. The gauss points for a triangular region differ from the ____ region. []
 a) Rectangular b) Triangular c) Square d) Temperature
16. In a nine node quadrilateral, the shape functions can be defined as _____ []
 a) Shape functions b) Generic shape functions c) Elements d) Planes
17. Beams are horizontal members used for supporting transverse loading. []
 a) True b) False
18. The total number of degrees of freedom in a beam with four nodes is _____. []
 a) Four b) eight c) sixteen d) thirty two
19. The displacements in beam elements are interpolated using _____ []
 c) Shape elements b) shape functions c) shape parameters d) shape factors
20. The shape functions for interpolation on beam elements are defined on the range of _____ []
 a) 0 to +1 b) -1 to 0 c) 0 to +2 d) -1 to +1



*****ALL THE BEST*****

Principal
 Sanskriti School of Engineering
 Beedupalli Road, Prasanthi,
 PUTTAPARTHI - 515 134.
 Anantapuramu (Dt) A.P.


Answer any three questions

1. Define Finite Element methods. Explain briefly about the general steps of the finite element methods.
2. Explain briefly about the following: a) Artificial Discretization
b) Natural Discretization.
3. A steel bar of length 1000 mm is subjected to an axial load of 4.5 kN with four dividing parts of bar. Find the elongation of the bar, neglecting self weight. Take $E = 2 \times 10^5 \text{ N/mm}^2$ $A = 450 \text{ mm}^2$.
4. A Beam of AB of span L simply supported at ends and carrying a concentrated load of W at the centre of C, Determine the deflection at mid span by using Rayleigh-ritz method and compare with exact solution.
5. The differential equation of a physical phenomenon is given by,

$$d^2y/dx^2 + y = 4x, 0 \leq x \leq 1, \text{ Boundary conditions are } y(0) = 0, y(1) = 1$$

Obtain one term approximate solution by using Galerkins method of weighted residuals.




Principal
Sanskriti School of Engineering
Beedupalli Road, Prasanna Nagar,
PUTTAPARTHI - 515 134,
Anantapuramu (Dt) A.P.

--	--	--	--	--	--	--	--	--	--

Answer all questions. Each Questions Carry 0.5 Marks

1. If the structure is divided into discrete areas or volumes then it is called an _____ []
a) Structure b) Element c) Matrix d) Boundaries
2. In finite element modeling nodal points are connected by nique _____ []
a) Surface b) Shape c) Eigen values d) Matrix
3. In finite element modeling every element connects to _____ []
a) 4 nodes b) 3 nodes c) 2 nodes d) Infinite no of nodes
4. In one dimensional problem, each node has _____ degrees of freedom. []
a) 2 degrees of freedom b) 3 degrees of freedom
c) No degrees of freedom d) 1 degree of freedom
5. One dimensional element is the linear segments which are used to model _____ []
a) Bars and trusses b) Plates and beams c) Structures d) Solids
6. Modeling is defined as _____ []
a) Elemental area with uniform cross section
b) Elemental area with non uniform cross section
c) Structural area with uniform cross section
d) Non Structural area with non uniform cross section
7. Discretization includes _____ numbering. []
a) Element and node b) Only nodal c) Only elemental d) Either nodal or elemental
8. Principle of minimum potential energy follows directly from the principle of _____ []
a) Elastic energy b) Virtual work energy
c) Kinetic energy d) Potential energy
9. The points at where kinetic energy increases dramatically then those points are called ____ []
a) Stable equilibrium points b) Unstable equilibrium points
c) Equilibrium points d) Unique points
10. We can obtain same assembly procedure by Stiffness matrix method and _____ []
a) Potential energy method b) Rayleigh method
c) Galerkin approach d) Vector method
11. Gaussian elimination is a name given to a well known method of solving simultaneous equation by successively eliminating _____ []
a) Variables b) Equations c) Unknown d) Algorithms
12. Potential energy, $\pi =$ _____ []
a) $1/2 Q^T K Q - Q^T F$ b) $Q K Q - Q F$ c) $1/2 K Q - Q F$ d) $1/2 Q F$
13. Equilibrium conditions are obtained by minimizing _____ []
a) Kinetic energy b) Force c) Potential energy d) Load
14. In elimination approach, which elements are eliminated from a matrix _____ []
a) Force b) Load c) Rows and columns d) Undefined
15. The line separating from the top zeros from the first non-zero element is called _____ []
a) Equation b) Gaussian solution c) Skyline solution
d) Both Gaussian and skyline solutions
16. Frontal method is a _____ of Gaussian elimination method that uses the structure of finite element problems. []
a) Structure b) Variation c) Algorithm d) Data
17. Frontal method is implemented for _____ []
a) Hexahedral element b) Polyhedral element
c) Octahedral element d) Both Hexahedral and Polyhedral
18. What is the Strain energy equation? []
a) $U_e = 1/2 q^T k^e q$ b) $U_e = 1/2 q^e k^e q$ c) $U_e = 1/2 q k^e$ d) $U_e = 1/2 q^T k^e$
19. What is the actual equation of stiffness matrix? []
a) $K = \begin{pmatrix} 1 & -1 \\ -1 & 1 \end{pmatrix}$ b) $K = AE/l \begin{pmatrix} 1 & \\ & -1 \end{pmatrix}$ c) $K = AE/l$ d) $K = AE/l \begin{pmatrix} 1 & -1 \\ & -1 \end{pmatrix}$
20. From where does the global load vector F is assembled? []
a) Element force vectors only b) Point loads only
c) Both element force vectors and point loads d) Undefined

*******ALL THE BEST*******



Answer any three questions

1. A Simply supported beam subjected to uniformly distributed load over entire span. Determine the bending moment and deflection at midspan by using Rayleigh-Ritz method and compare with exact solutions.
 - i) Deflection and Bending moment at midspan.
 - ii) Compare with exact solutions. **Co 1 L4**

2. A Simply supported beam subjected to uniformly distributed load over entire span and it is subjected to a point load at the centre of the span. Calculate the bending moment and deflection at midspan by using Rayleigh-Ritz method and compare with exact solution.
 - i) Deflection and Bending moment at midspan.
 - ii) Compare with exact solutions. **Co 2 L2**

3. The differential equation of a physical phenomenon is given by, **Co2 L5**
$$d^2y/dx^2 + 500x^2 = 0, 0 \leq x \leq 1, \text{ Trial function, } y = a_1(x-x^4)$$


Boundary conditions are $y(0) = 0, y(1) = 0$
Calculate the value of the parameter a_1 by the following methods:

 - (i) Point Collocation
 - (ii) Sub domain collocation
 - (iii) Least squares
 - (iv) Galerkin.

(ii) A steel bar of length 800mm is subjected to an axial load of 3 kN. Find the elongation of the bar, neglecting self weight.
Table E = $2 \times 10^5 \text{ N/mm}^2$, A = 300 mm^2 .

4. A thin steel plate of uniform thickness 25mm is subjected to a point load of 420 N at mid depth, The plate is also subjected to self-weight. If Young's modulus, $E = 2 \times 10^5 \text{ N/mm}^2$ and unit weight density. $\rho = 0.8 \times 10^{-4} \text{ N/mm}^3$, calculating the following:
 - (i) Displacement at each nodal point.
 - (ii) Stresses in each element. **Co1 L5**




Principal
Sanskriti School of Engineering
Beedupalli Road, Prasad,
PUTTAPARTHI - 515 101,
Anantapuramu (Dt) A.P.