FACULTY OF ENGINEERING
## B.E. (Civil) VI – Semester (CBCS) (Suppl.) Examination, November 2020

Subject: Theory of Structures – II

Time: 2 Hours   Max.Marks: 70

Note: Answer any five questions from Part-A and any four questions from Part-B
PART – A (5x2 = 10 Marks)

1. The absolute maximum Shear force in a girder subjected to a udl shorter than span occurs at a section _____

2. Define Influence line diagram with suitable examples.

3. Draw the ILD for bottom chord member of central panel of a three paneled warren truss.

4. Find the maximum tension in the cable suspended between two support which are at same level and 80 m apart. The lowest point of the cable is 10 m below the support levels and the cable is carrying a udl of 20 kN/m over entire span.

5. Develop the flexibility matrix for a beam element of length 'l' flexural rigidity 'EI'. Shown in fig(1).
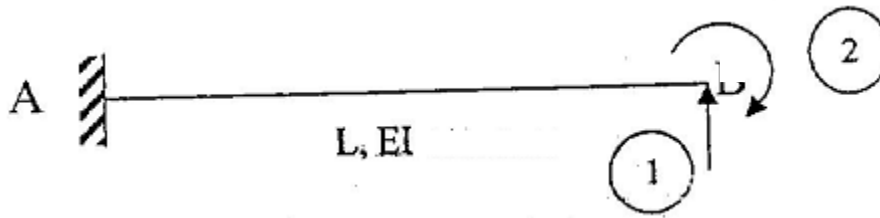
Fig. 1

6. What is lack of Fit? How the forces induced in the member of truss due to lack of fit can be determined?

7. Explain how the stiffness coefficients are obtained for a two noded beam element?

   Neglect axial deformations.

8. Compute the member force of the truss member inclined at an angle of 60^0 with the horizontal. The displacement of the far end along X and Y axes are 0.3 mm and 0.4 mm and the near end is hinged. Take AE/L = 100 kN/mm.

9. What is reason of symmetry for Flexibility and Stiffness matrix.

10. Using Direct Element Method develop the stiffness matrix for a two span continuous beam with far ends hinged.

PART - B (4x15 = 60 Marks)

11. A series of moving loads of magnitude 100 kN, 110 kN, 70 kN & 60 kN with 100 kN leading are moving on a girder of span 20 m from left to right. The distances between these loads are 2 m, 1 m and 2 m respectively. Find Maximum Shear Force and bending moment at a section 7 m from left end. Also find the absolute Maximum Bending Moment for the girder.

12 Draw the ILD for the members U_2U_3 , L_2U_3 U_3L_3 and $L_2L_3$of a Pratt truss shown in Fig.(2).
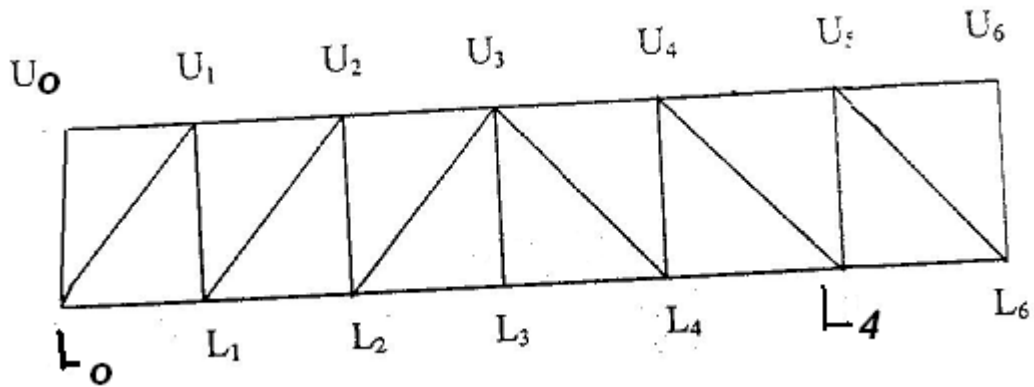

Fig.2

13 Analyze the continuous beam shown in Fig. (3) by flexibility method, if the support at 'B' sinks down by 100 / EI. Draw the BMD and SFD for the beam.
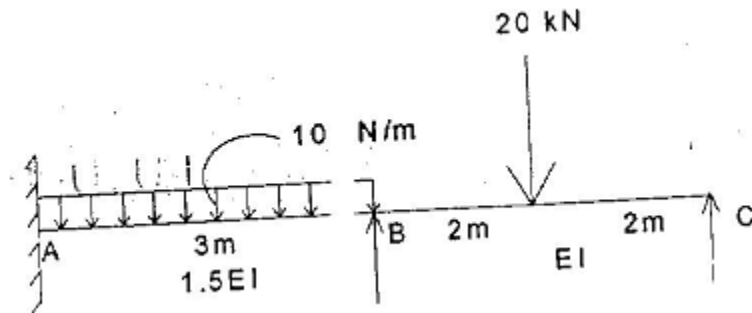

Fig. 3

14 Analyze the rigid jointed frame shown in Fig. (4) using stiffness method. Also draw the BMD and SFD.

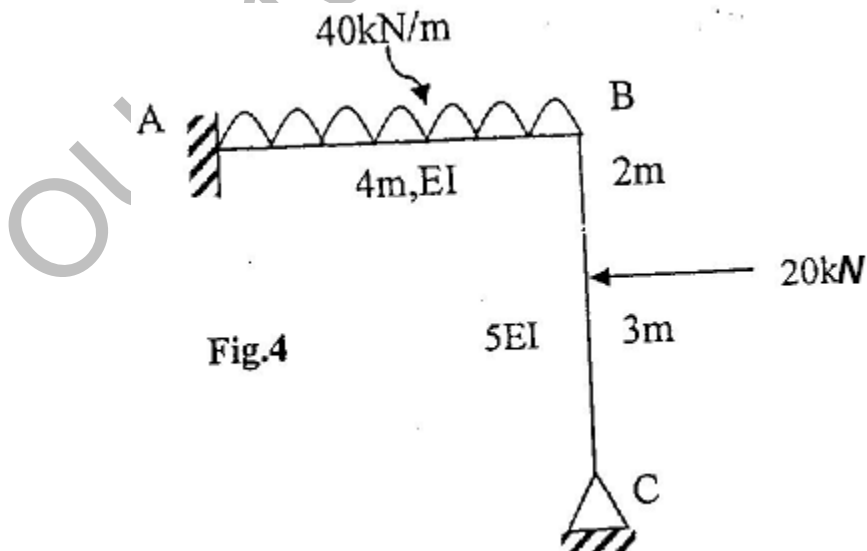

Fig.4

15 Two load of magnitude 200 kN and 160 kN which are 2m apart are moving on a girder of span 16m from left to right with 160 kN leading. Draw the curves of bending moment and shear force for the girder.

16 A suspension bridge with a parabolic cable of span 100m and a dip of 15m is stiffened by a three hinged stiffened girder to restrain the cable to maintain its parabolic shape. The stiffening girder carries two concentrated load of 20 kN each placed at 15m and 30m from left support. Evaluate B.M. and S.F. in the girder at a section 40m from left hinge. Also determine maximum tension in the cable.

17 Write short notes on the following:
   a) Direct Stiffness method
   b) EUDLL
   c) STAAD Pro Software for Analysis

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FACULTY OF ENGINEERING

B. E. (EEE) (CBCS) VI – Semester (Supply.) Examination, November 2020
Subject: Switch Gear & Protection

Time: 2hours   Max. Marks: 70

Note: Answer any five questions from Part-A and any four questions from Part-B
PART – A (5x2 = 10 Marks)

1. Explain primary and backup protection.
2. Define distance relay and also explain R-X diagram.
3. Mention different protection schemes for generator protection.
4. What is IDMT relay?
5. Give the classification of circuit breaker based on operating voltages.
6. For a 132 KV system, the reactance and capacitance up to the location of the circuit breaker is 3Ω and 0.015μF respectively. Calculate the frequency of transient oscillation and maximum value of RRRV.
7. What are the drawbacks in using Merz-price protection (Differential Protection)?
8. Distinguish between amplitude and phase comparators.
9. Define PSM, TSM & Pick-up value of a relay.
10. What is the use of Peterson coil?

PART – B (4 x 16 = 60 Marks)

11. (a) With a neat diagram explain the percentage differential protection scheme of Protection of stator of alternator.

    (b) What is magnetizing inrush currents? Discuss the protective scheme which protects the transformer against faults but does not operate in case of magnetizing Inrush current.

12. (a) What is ground wire? How do ground wires protect the overhead lines against direct lightening strokes?

    (b) Describe the construction and principle of operation of value type lightening arrestor.

13. (a) Explain duality between amplitude and phase comparator with neat phasor diagram.

    (b) With a block diagram, explain the Micro processor based over current relay.

14. Derive an expression of restriking voltage, RRRV and maximum RRRV.

15. Explain construction and working principle of Air Blast & MOCB Circuit Breaker with diagrams.

16. (a) Explain, with essential sketches where necessary, the working of an axial air blast circuit breaker.

    (b) Draw the connection diagram of a differential relay for protecting a star – delta transformer. How the bias winding of a differential relay does restricts malfunctioning of the relay against (i) CT mismatch (ii) on-load tap changing and (iii) Magnetizing current?

17. Write a short note on (a)Testing of circuit breaker (b) Three skp distance relay.

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FACULTY OF ENGINEERING
B.E VI Semester (CBCS) (Inst.) (Backlog) Examination, November 2020

Subject: Process Control

Time: 2hours   **Max. Marks: 70**
Note: Answer any five questions from Part-A and any four questions from Part-B

PART – A (5x2 = 10 Marks)
1   What is dead time process?
2   What is thermal element lag?
3   What are the merits and demerits of Derivative controller.
4   With neat block diagram explain automatic controller.
5   What is acceleration error?
6   Define offset.
7   Mention a few electrical final control elements.
8   What is the necessity of an Actuator?
9   Explain the function of timers in PLC programming.
10 Draw the Ladder diagram for OR Gate.

PART – B (4x15=60 Marks)
11 With a neat diagram explain interacting systems and also find it's transfer function.

12 Explain the P+I controller operation. Write all the relevant equations and graphical
     interpretation and also obtain its electronic implementation.

13 a) Explain in detail about multiple-speed floating controller.
     b) Explain in detail about ON-OFF Controller.

14 a) With neat diagram explain the pneumatic actuators.
     b) An Equal percentage valve has a maximum flow of 50 m^3/sec and minimum flow of
         2 m^3/sec, if the full travel is 3cm, find flow at a 1cm opening.

15 Explain the open loop transient response method for controller parameter setting.

16 a) Explain the block diagram of PLC
     b) With a neat diagram explain the relay controller.

17 Write short notes on
     a. Pressure process
     b. Characteristics of physical systems
     c. Hydraulic Actuator

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FACULTY OF ENGINEERING

B.E. (ECE) VI – Semester (CBCS) (Backlog) Examination, November 2020

Subject: Antennas and Wave Propagation

Time: 2hours   **Max. Marks: 70**

Note: Answer any five questions from Part-A and any four questions from Part-B

PART – A (5x2 = 10 Marks)

1. Calculate the directivity of an antenna, if HPBW on one plane is 30° and 60° on orthogonal plane?

2. Distinguish between near field and far fields

3. If a helical antenna has a spacing between turns 0.05m, diameter 0.1m, Number of turns equal to 20 and operates at 1.5GHZ, find Directivity.

4. Define the terms antenna efficiency and radiation efficiency

5. Why is zoning done in lens antenna?

6. Describe the cassegrain method of feeding a parabolic reflector

7. Explain the construction of Yagi-Uda antenna.

8. A linear broad-side array consists of 4 equal isotropic sources with $\lambda / 3$ spacing

   (Overall length of array =λ). Calculate Directivity and beam width.

9. Define Wave tilt of Ground Wave

10. What is skip distance

PART – B (4x15=60 Marks)

11 a) Derive the relation between Directivity and effective aperture of an antenna.
   b) Explain the isotropic, directional and omnidirectional patterns.

12 Show that the radiation resistance of half wave dipole is 73Ω

13 a) Explain different feed methods used for parabolic reflector antennas.
   b) Explain in detail the function and design of a horn antenna.

14 a) With necessary diagrams explain the principle of operation of Lens antennas and also discuss its advantages and disadvantages.
   b) Explain in detail about Smart antennas Classification.

15 a) Discuss broadside array and end fire array with neat diagrams.
   b) Explain in detail about the measurement of radiation pattern with neat diagram.

16 a) Derive Friss transmission formula.
   b) Explain the concept of Radiation, induction and electrostatic fields

17 a) Describe the troposphere and explain how ducts can be used for microwave Propagation.
   b) Write a short note on Virtual height, Line of sight propagation.

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FACULTY OF ENGINEERING

BE VI-Semester (CBCS) (Mech.) (Backlog) Examination, November 2020

Subject: Hydraulic Machinery and Systems

Time: 2hours   Max. Marks: 70

Note: Answer any five questions from Part-A and any four questions from Part-B

PART – A (5x2 = 10 Marks)

1. How do you classify Hydraulic machinery?
2. Define the impact of jet.
3. A single acting reciprocating pump running at 100 rpm delivers 12 lit /sec water. The diameter and stroke of the cylinder are 20 cm and 30 cm respectively find the coefficient of discharge of pump?
4. Draw performance curves of Reciprocating pumps.
5. What is the significance of priming in centrifugal pump?
6. Define specific speed of Centrifugal pump
7. Differentiate between Inward and Outward radial flow reaction turbine?
8. The type of turbine used is, if the head is 150 meters to develop 1500KW, while running at 300 rpm is?
9. What are the specifications of the D.C valve?
10. Write the basic components of hydraulic circuits.

PART – B (4x15=60 Marks)

11. A jet of water of 5 cm dia impinges on a curved vane and deflected through an angle of 175 deg the vane moves in the same direction as that of jet with a velocity of jet 35 m/s. if the rate of flow is 170 R.p.s. Determine the component force on the vane in the directional motion. How much would be power developed what would be the vane efficiency?

12. Obtain an expression for the force exerted by a jet of water on moving Hinged plate in the direction of jet.

13. The cylinder bore diameter of a single acting reciprocating pump is 120mm and its stroke is300mm.Thepump runs at 70 R.p.m and lifts water through a height of 25m. The delivery pipe is 22m long and 90mm in diameter. Find the acceleration head at the beginning and middle of the delivery stroke?

14. With help of neat sketch explain the working of Double acting Reciprocating pump?

15. a. With help of neat sketch explain the working of centrifugal pump?
    b. Centrifugal pump runs at 800 rpm and delivers 5cubic meters per sec against a head of 7 m, the impeller has an outer diameter of 25cm and width of 5cm at out let if the vane angle at the out let is 50 degrees determine 1) manometric efficiency, 2) specific speed?

16. For a Kaplan turbine with a runner diameter 4meter the discharge is 60 cubic meters/ sec and the hydraulic and mechanical efficiencies 90% and 84% resp. The dia of boss is 0.3 times the runner dia and speed ratio is 2.0. Assuming that discharge is free and there is no whirl at outlet, calculate the net available head on the turbine and specific speed?

17. Write short notes on the following.
    a. Explain working principle of external pumps

    b. Working of various servo systems?

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FACULTY OF ENGINEERING
B.E. VI-Semester (CBCS) (Prod.) (Backlog) Examination, November 2020

Subject : Modern Machining & Forming Methods

Time: 2hours   Max. Marks: 70

Note: Answer any five questions from Part-A and any four questions from Part-B

PART – A (5x2 = 10 Marks)

1 Mention the applications of Abrasive Jet machining.
2 What are the functions of 'liquid medium in slurry' used in USM?
3 Mention the desired properties of dielectric medium used in EDM.
4 Explain the principle of Rotary machining process.
5 What do you understand by Ion etching? Explain.
6 What are the applications of LBM.
7 What are the limitations of Hydrostatic forming?
8 What are the effect of stand off distance in explosive forming?
9 Classify stretch forming processes.
10 Write the applications of Water Hammer Forming.

PART – B (4x15=60 Marks)

11 a) Explain the working principle of water jet machining with a neat sketch.
   b) Explain the various tool feed systems used in Ultrasonic machining.

12 a) Sketch and explain the working principle and operation of EDM. Mention its applications.
   b) What are the functions of electrolyte? What are the factors need to be considered while selecting it?

13 a) What do you understand transferred and non-transferred arc in PAM? Explain them with sketch.
   b) How electron beam is produced? Write advantages and disadvantages of EBM process.

14 a) Explain with a neat sketch – electro – hydraulic forming.
   b) Explain the principle, limitations and applications of contact type of explosive forming process.

15 a) Difference between stretch draw forming and rotary stretch forming.
   b) What is tube spinning? Differentiate between backward flow and forward flow spinning.

16 a) Mention the advantages, limitations and applications of HERF.
   b) Explain the working principle, advantages and disadvantages of Electro Chemical milling process.

17   Write short notes on the following:
   a) Transducers used in USM
   b) Laser Beam Machining
   c) Radial Draw Forming

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FACULTY OF ENGINEERING
B.E (AE) VI Semester (CBCS) (Backlog) Examination, November 2020

Sub: Computer Aided Design Analysis and Manufacturing

Time: 2hours   **Max. Marks: 70**
Note: Answer any five questions from Part-A and any four questions from Part-B

PART – A (5x2 = 10 Marks)

1   State the CAD tools required to support a cad/cam system from conceptualization to documentation.
2   State the geometric surfaces representation of (i) analytical (ii) synthetic
3   State the need for standard data format communication in cad/cam systems.
4   What is cutter center programming and zero radius programming.
5   What is computer aided process planning.
6   What are the practical applications of B spline and Bezier curve.
7   What are functions of DNC.
8   Sketch the synthetic curve order C^1, C^2.
9   Derive the mathematical definition of (i) Bezier Curve.
10 State the role of solid modeling in desing and manufacturing.

PART – B (4 x 15 = 60 Marks)

11 a) Explain five popular database models in cad/cam system.
   b) Write a parametric equation of cubic spline curve and derive the **(i)** co-efficient, **(ii)** geometric coefficient.

12 a) Explain the CSG(C-rep) solid model building schemes **(i)** r-sets (bounded solid primitives, **(ii)** non-r sets (half spaces unbounded).
   b) Sketch a parametric surface patch with its boundary conditions.

13 a) Explain cad/cam data exchange format for **(i)** shape based, **(ii)** product data, **(iii)** ISO standard.
   b) Explain element shape function equation using **(i)** variational approach, **(ii)** weighted residuals methods.

14 a) Sketch the machining path **(i)** Point to Point and **(ii)** Continuous.
   b) State the z-axis control plane position in **(i)** 2 axis, **(ii)** 2 ½ axis, **(iii)** 3axis and **(iv)** multi-axis machine tool motion.

15 a) **(i)** Sketch the working of Coordinate Measuring machine (CMM), **(ii)** What type of geometric features are measured on CMM.
   b)   Explain the principle and working of generative CAPP.

16 a) Explain CAPP approach to variant process planning.
   b) Sketch and derive the parametric representation of **(i)** ruled surface, **(ii)** surface of revolution.

17 a) Explain the functions of a shop floor control system.
   b) Discuss your understanding by the Finite element model? Give an example of modelling a mechanical component.

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FACULTY OF ENGINEERING

B.E. VI-Semester (CBCS) (CSE) (Backlog) Examination, November 2020

Subject : Web Programming

Time: 2hours   Max. Marks: 70

Note: Answer any five questions from Part-A and any four questions from Part-B

PART – A (5x2 = 10 Marks)

1. Explain about WWW and URL.
2. Write an HTML5 image tag with any four attributes.
3. Write JavaScript Code to validate phone numbers to be 10 digits.
4. What is DTD and Namespaces in XML.
5. What is the difference between Servlet and JSP.
6. Explain Anatomy of Servlet with diagram.
7. Explain HTTP Request Object in Ajax.
8. Explain functions in Python with example.
9. What are different types of JDBC drivers.
10. Write about session tracking in PHP.

PART-B (4x15=60 Marks)

11. a) Write an HTML5 program to create Students Registration page using Text field, Password field, checkboxes, radio button, select option and buttons.
    b) Explain different types of Lists in HTML5

12. a) Explain XSLT and XML processors.
    b) Write a program to display XML document with CSS and explain its working.

13. a) Explain Event handling in JavaScript.
    b) Explain about control statement and functions in PHP.

14. a) Write python program to perform file operations.
    b) Explain python interactive interpreter and data types in python.

15. a) What are the differences between CGI and Servlets.
    b) Write a JSP program to retrieve data from an HTML form.

16. a) Explain sessions handling in Java Servlets.
    b) Explain request string, Cookies and Sessions Object in JSP.

17. Write short notes on:-
a) Cascading Style Sheets.
b) Deployment Descriptor with example.
c) Pattern Matching in PHP.

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FACULTY OF ENGINEERING
B.E. (I.T.) VI-Semester (CBCS) (Backlog) Examination, November 2020

Subject : Complier Construction

Time : 2 Hours   Max. Marks: 70

Note: Answer any five questions from Part-A and any four questions from Part-B

PART – A (5x2 = 10 Marks)

1 What is compiler construction?
2 Write about role of lexical analyzer.
3 Write about left recursion with an example.
4 What is meant by augmented notation in bottom-up parsing?
5 Define syntax directed definition.
6 Draw and explain general form of activation record.
7 Draw the structure of symbol table.
8 What is dependency graph?
9 What is flow graph?
10 Write about dead code elimination. Give example.

PART- B (4x15=60 Marks)

11 Construct first & follow sets, LL(1) predictive parser table for the following grammar
   $E \rightarrow E+T$
   $T \rightarrow TF \mid F$
   $F \rightarrow F^* \mid a \mid b$

12 Check whether the following grammar is SLR grammar or not
   $E \rightarrow E + n \mid n$

13 Explain in detail about translation process.

14 Write about :
   (a) Data structures of symbol table
   (b) Access to non-local data on stack

15 (a) Write about applications of SDT.
   (b) Write SDD for the following grammar

           number $\rightarrow$ number digit | digit
                digit $\rightarrow$ 0| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9

16 Write in detail about principal sources of optimization.

17 Explain about
   (a) Recognition of tokens
   (b) Ambiguous grammar
   (c) Boot strapping

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FACULTY OF ENGINEERING

B. E. 3/4 (Civil) II – Semester (Backlog) Examination, November 2020

Subject: Theory of Structures-II

Time : 2 Hours   **Max. Marks : 75**

Note: Answer any seven questions from Part – 'A' and any three questions from Part – 'B'

PART – A (7x3=21 Marks)

1 The absolute maximum Shear force in a girder subjected to a udl shorter than span occurs at a section _____.
2 Define Influence line diagram with suitable examples.
3 Find the maximum horizontal thrust in a cable suspended between two support which are at same level and 80 m apart. The lowest point of the cable is 10 m below the support levels and the cable is carrying a udl of 20 kN/m over entire span.
4 What is lack of Fit? How the forces induced in the member of truss due to lack of fit can be determined?
5 What is reason of symmetry for Flexibility and Stiffness matrix.
6 Develop the flexibility matrix for a beam element of length 'l' flexural rigidity 'EI'. Shown in fig(1).

A ———————————————— B   ②

L, EI

Fig.1

7 Explain how the stiffness coefficients are obtained for a two noded beam element? Neglect axial deformations.
8 Compute the member force of the truss member inclined at an angle of 60^0 with the horizontal. The displacement of the far end along X and Y axes are 0.3 mm and 0.4 mm and the near end is hinged. Take AE/L = 100 kN/mm .
9 Using Direct Element Method develop the stiffness matrix for a two span continuous beam with far ends hinged.
10 What are the limitations of STAAD Pro?

PART-B (3 x 18 = 54 Marks)

11 A series of moving loads of magnitude 100 kN, 110 kN, 70 kN & 60 kN with 100 kN leading are moving on a girder of span 20 m from left to right. The distances between these loads are 2 m, 1 m and 2 m respectively. Find Maximum Shear Force and Bending moment at a section 7 m from left end. Also find the absolute Maximum Bending Moment for the girder.

12 Draw the ILD for the members U_3U_4 , L_4U_3 U_3L_3 and L_3L_4 of a Pratt truss shown in Fig.(2).
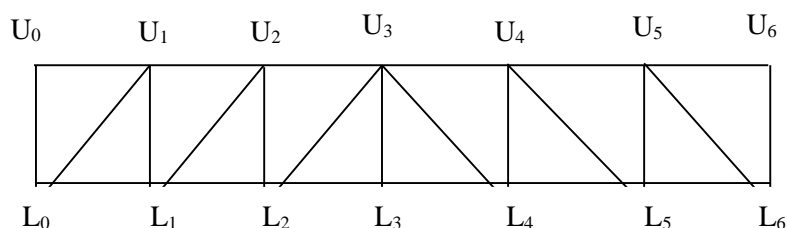
U_0 U_1 U_2 U_3 U_4 U_5 U_6

L_0 L_1 L_2 L_3 L_4 L_5 L_6

13 Analyze the continuous beam shown in Fig.(3) by Flexibility method, if the support at 'B' sinks down by 100/EI. Draw the BMD and SFD for the beam.
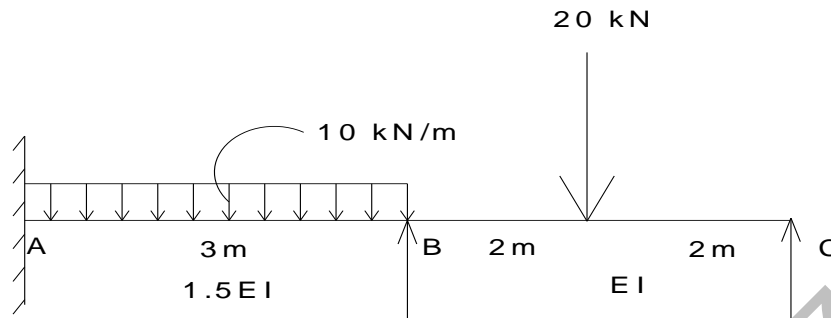

Fig.3

14 Analyze the Rigid jointed frame shown in Fig.(4) using Stiffness method. Also draw the BMD and SFD.
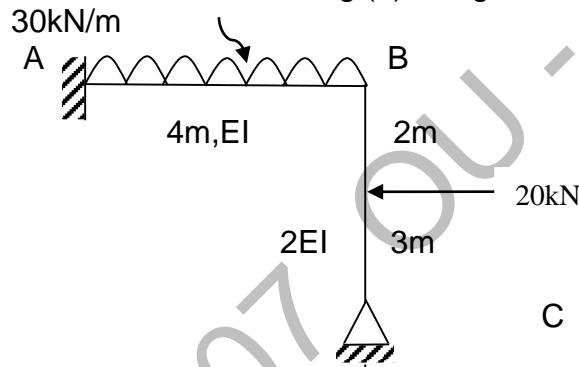

Fig.4

15 Two load of magnitude 120 kN and 100 kN which are 2 m apart are moving on a girder of span 16 m from left to right with 100 kN leading. Draw the curves of Bending moment and Shear force for the girder.

16   A suspension bridge with a parabolic cable of span 100 m and a dip of 15 m is stiffened by a three Hinged stiffened girder to restrain the cable to maintain its parabolic shape. The stiffening girder carries Two concentrated load of 20 kN each placed at 15 m and 30 m from left support. Evaluate B.M and S.F in the girder at a section 40m from left hinge. Also determine maximum tension in the cable.

17 Write short Note on the following:
   a) Direct Stiffness method.
   b) EUDLL
   c) STAAD Pro Software for Analysis.

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FACULTY OF ENGINEERING

B. E. 3/4 (EEE) II – Semester (Backlog) Examination, November 2020
Subject: Switch Gear and Protection

Time : 2 Hours   Max. Marks : 75

Note: Answer any seven questions from Part – 'A' and any three questions from Part – 'B'
PART – A (7x3=21 Marks)

1. Explain primary and back up protection.
2. Define (a) PSM (b) TSM.
3. Write the advantages of static relays over electromagnetic relays.
4. Draw block diagram of microprocessor based relay and mention advantages of using microprocessor based relay.
5. What do you understand by differential relays?
6. Explain the operation of Buchholz Relay.
7. Define Restriking and Recovery Voltage.
8. Give the classification of circuit breaker based on operating voltages.
9. Define protective angle & Protective Zone.
10. What is Surge Absorber?

PART-B (3 x 18 = 54 Marks)

11. (a) Explain construction and working principle of induction type directional power relay with neat diagram.
    (b) With a neat diagram, explain the protective scheme for ring main system.

12. (a) Explain the duality between Amplitude comparator and phase comparator with neat phasor diagrams.
    (b) Draw the flow chart for microprocessor based over current relay.

13. (a) Draw the connection diagram of a differential relay for protecting a star – delta Transformer & explain its operation.
    (b) Discuss protection of transformer against magenetizing in rush current with neat diagram.

14. (a) In a power system the Rms voltage is 38.15 kV, L is 10mH and C is 0.01 μF. Determine:
    (i) Peak restriking voltage across the circuit breaker.
    (ii) Frequency of restriking voltage transient.
    (iii) Average rate of restriking voltage upto peak restriking voltage and
    (iv) Maximum RRRV.
    (b) Define the construction and operation of SF_6 circuit breaker.

15. (a) What is a ground wire? How do ground wires protect the over head lines against direct lightning strokes?
    (b) Describe the construction and principle of operation of operation of Valve type lightning arrester.

16. (a) Obtain following relay characteristics on R-X diagrams.
    (i) Impedance relay (ii) Reactance relay
    (b) With a neat diagram explain the construction and working of Stator Inter turn protection scheme.

17. Write short notes on any two of the following:
    (a) Peterson coil.
    (b) Percentage bias differential Relay.
    (c) Current chopping.

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FACULTY OF ENGINEERING

B. E. 3/4 (Inst.) II – Semester (Backlog) Examination, November 2020
Subject: Power Plant Instrumentation

Time: 2 hours   **Max. Marks: 75**

Note: Answer any seven questions from Part – 'A' and any three questions from Part – 'B'
PART – A (7x3=21 Marks)

1. What is meant by Attemperation?
2. Draw the P&I diagram of three element drum level control.
3. Explain the basic principle involved in Nuclear power plant.
4. What are non-conventional energy sources?
5. Draw the block diagram of power generation using TPP?
6. What are the different types of glands used in steam exhaust control?
7. Discuss about feed water conditioning.
8. How many types of condensate systems are present in TPP?
9. What are the types of non-contact type transducers for speed measurement?
10. Draw the correct position of economizer if feed water control.

PART-B (3 x 18 = 54 Marks)

11. (a) With a neat diagram explain the turbine following mode.

    (b) Write briefly about draught in TPP?

12. With a neat diagram explain lubricating oil temperature control in turbine supervision and control system.

13. With a neat diagram explain the power generation in Nuclear Power Plant (NPP) and explain the importance of control rods in NPP.

14. (a) With a neat block diagram explain TSI (Turbine supervisory instrumentation).

    (b) Discuss about Flame monitoring.

15. With relevant diagrams explain piping system for pressure measuring devices in TPP.

16. Explain with a process diagram the fuel-air ratio control and discuss about O_2 trimming methods.

17. Write short notes on
    (a) P & I diagram of boiler.

    (b) Boiler drum level control system.

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FACULTY OF ENGINEERING

BE 3/4 (ECE) II Semester (Backlog) Examination, November 2020

Subject: Antennas and Wave Propagation

Time: 2 Hours **Max. Marks: 75**

Note: Answer any seven questions from Part – 'A' and any three questions from Part – 'B'

PART – A (7x3=21 Marks)

1 Define beam efficiency.
2 Differentiate between near and far fields of antenna with necessary equations.
3 Find Length of Half wave dipole at 30 MHz.
4 Define retarded potential.
5 Mention the applications of Parabolic Reflector antenna.
6 What is Zoning in Lens-Antenna? Mention the types of Zoning.
7 Define a Binomial array with necessary equations.
8 Define Pattern Multiplication with an example.
9 State different factors involved in radio wave propagation.
10 Define Critical frequency and Optimum working frequency.

PART-B (3 x 18 = 54 Marks)

11 a) Briefly explain about the Antenna Parameters with neat sketches and related
    formulae.
   b) The radiation resistance of an antenna is 72Ω and the loss resistance is 8Ω. What
    is the directivity if the power gain is 16?

12 Derive the equations for electric field and magnetic field of Small Loop antenna.

13 a) Describe the Principle of operation of Yagi-Uda antenna. Explain the properties
    with reference to directivity and bandwidth.
   b) Describe the similarities and differences of lens antenna with reflector antenna.

14 a) Draw the radiation pattern of 4- isotropic sources of equal amplitudes and phases
    in Broad side and end fire arrays.
   b) Explain the effect of inter element phase shift on beam scanning.

15 a) Briefly discuss about the layers of atmosphere.
   b) Discuss about the types of wave propagation with neat sketches.

16 a) Derive Friss Transmission formula. Interpret the parameters in the formula.
   b) Write short notes on Binomial array.

17 Write short notes on
    a) Line of Sight Propagation.
    b) Field Zones of Antenna.

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FACULTY OF ENGINEERING
BE 3/4 (Mech./AE) II-Semester (Backlog) Examination, November 2020

Subject: CAD / CAM

Time: 2 Hours   **Max. Marks: 75**

Note: Answer any seven questions from Part – 'A' and any three questions from Part – 'B'
PART – A (7x3=21 Marks)

1. What do you mean by Design Criteria?

2. Distinguish parametric and non-parametric representation of curves.

3. What is homogeneous representation in transformation?

4. Compare open loop and closed loop in NC system.

5. Extend the terms (a) IGES, (b) STEP and (c) STL

6. What do you mean by canned cycle?

7. Classify various types of APT statements.

8. Explain Define robot anatomy.

9. Explain CAPP.

10. What is reverse Engineering?

PART-B (3 x 18 = 54 Marks)

11. (a) What do you mean by interpolation and approximation of curves? Explain with sketch.
    (b) A cubic Bezier curve is described by four control points, $P_0(0,0)$, $P_1(2,1)$, $P_2(5,2)$ and $P_3(6,1)$. Find the tangent to the curve at $u = 0.25$.

12. (a) What do you mean by reflection transformation? Write the transformation matrix for reflection about three axes.
    (b) A line defined by two endpoints A(1, 0), B (2, 5) is rotated by 30° about (a) Origin and (b) about the point (2, 5). Determine the coordinates of transformed line.

13. (a) Explain the structure of relational and hierarchical database.
    (b) Explain about STL and STEP file formats.

14. (a) Explain in brief the following features of an industrial robot. i) Work Volume, ii) Payload, iii) Precision on movement, iv) Accuracy and repeatability and v) Resolution.
    (b) What is computer aided quality control? Explain the working of scanning laser beam device with sketch.

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15 Develop an APT part program for the profile shown in fig 1. The processing parameters are: (a) feed rate is 4.5 inches per minute; (b) spindle speed is 670 revolutions per minute; (c) a coolant is to be used to flush the chips; (d) the cutter diameter 0.5 inches,
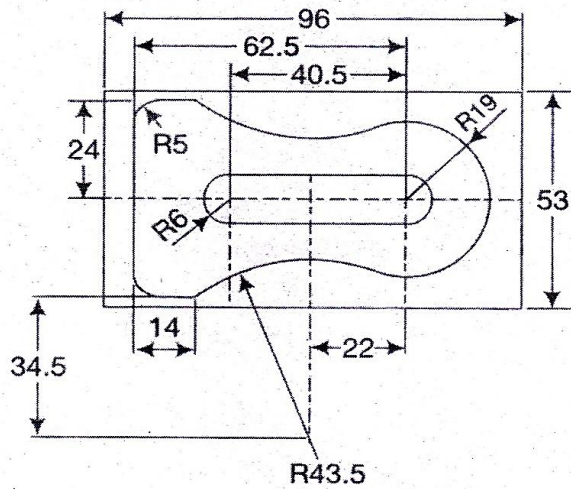

Fig. 1

16 (a) Explain retrieval CAPP and generative CAPP system.
   (b) Compare offline and offline inspection.

17 (a) Explain the methodology of rapid prototyping.
   (b) Write a short note on: (i) OPTIZ coding system (ii) FMS.

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FACULTY OF ENGINEERING
BE 3/4 (Prod.) II-Semester (Backlog) Examination, November 2020

Subject: Turbo Machinery

Time: 2 Hours   **Max. Marks: 75**

Note: Answer any seven questions from Part – 'A' and any three questions from Part – 'B'
PART – A (7x3=21 Marks)

1   Classify the various types of turbo machines.
2   Explain the various types of losses in turbo machines.
3   Write the differences between centrifugal and axial flow compressors
4   Define specific speed of a pump and its significance.
5   Define Unit quantities?
6   Differentiate between Propeller and Kaplan turbines
7   Differentiate between inward and outward radial flow reaction turbine
8   Draw velocity diagram of Francis turbine
9   Explain the differences between impulse steam turbine and reaction turbine.
10 Write the advantages and disadvantages of closed gas turbine.

PART – B (3x18=54 Marks)

11 (a) A jet of water with a velocity of 60m/sec strikes a curved vane moving at
        30m/sec, the jet makes an angle of deflection is 120^0. Determine the work
         done of water and Hydraulic efficiency.
   (b) Application of aerofoil theory to Turbo machinery blades.

12 A centrifugal pump having outer diameter equal to two times the inner diameter and running at
    1200rpm works against a total head of 75 m. The
    velocity of flow through the impeller is constant and equal to 3 m/s. The
    vanes are set back at an angle of 30° at outlet. If the outer diameter of
    impeller is 600 mm and width at outlet is 50 mm, determine : a) vane angle
    at inlet b) work done per second by impeller c) manometric efficiency.

13   A Pelton wheel is to be designed for the following specifications.
      Power = 735.75 KW , S.P. Head = 200 m, speed = 800rpm, η_0 = 0.86 and
      jet diameter is not to exceed one –tenth the wheel diameter. Determine
      i) wheel diameter , ii) the number of jets required, and iii) Diameter of the jet.

      Take C_v = 0.98 and speed ratio=0.45.

14   Discuss the working principal of Kaplan turbine with a neat sketch.

15 (a) Write short notes on methods of compounding.
    (b) Explain steam turbine with regeneration cycle.

16 Explain the methods of improving thermal efficiency of gas turbines.

17 Write short notes on the following:
    (a) Cavitation and its effects.
    (b) Explain the principle of Pelton wheel with a neat sketch.
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FACULTY OF ENGINEERING

B.E. 3/4 (CSE) II-Semester (Backlog) Examination, November 2020

Subject : Compiler Construction

Time : 2 Hours   Max. Marks: 75

Note: Answer any seven questions from Part – 'A' and any three questions from Part – 'B'
PART – A (7x3=21 Marks)

1. What is the difference between phase and pass?

2. Explain translator

3. What are the preprocessing steps required for predictive passer?

4. What is Back tracking? Explain with an example?

5. Explain Bottom up passing with an example?

6. What is syntax tree?

7. Explain symbol Table?

8. What is Handle and Handle pruning?

9. List the characteristics of peephole optimization

10. Write the rules for finding leaders in Basic Blocks?

Part – B (3x18=54 Marks)

11 Explain the Translation process with an example?

12. a. Explain the Concept of input buffering?
    b. Explain the role of lexical analyses?

13. Construct the passing table for LALR (1) Parks for the given grammer?
$$S \rightarrow CC$$
$$C \rightarrow aC$$
$$C \rightarrow d$$

14. Explain symbol table organization for block structured languages & non block structured languages?

15. a. Translate the expression a + a * (b-c) + (b-c) * d info quadruples, triples and indirect Triples
    b. Explain Heap management in detail

16. a. Explain Machine Independent Optimization?
    b. Explain DAG with an example?

17. Write Short notes on :
    a. Major Data Structures in Compiler
    b. Lex Tool
    c. Error Handling Recovery

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FACULTY OF ENGINEERING

BE 3/4 (IT) II-Semester (Backlog) Examination, November 2020

Subject : Compiler Construction

Time: 2 Hours   Max. Marks : 75

Note: Answer any seven questions from Part – 'A' and any three questions from Part – 'B'

PART – A (7x3=21 Marks)

1. Differentiate between NFA,DFA, and CFG.
2. Eliminate left recursion from the following grammar.
    E → E+T|T
    T →T*F|F
    F →(E)|id
3. Write the syntax of TINY language.
4. Write about boot strapping and porting.

5. What is the difference between LL(1) and LR(0) grammars?
6. Define attribute grammar.
7. Write about parameter passing techniques with example for each.
8. Draw general representation of memory organization.
9. Write 3-address code for the give expression, a=b*-c+b*-c.
10. List out various code optimization techniques.

PART- B (3x18=54 Marks)

11. a) What are the issues in compiler structure Explain.
    b) Explain about implementation of TINY Scanner.

12. a) Explain about EBNF notations and abstract syntax tree.
    b) How to construct RD parser for TINY language? Explain.

13. a) Explain in detail about structure of symbol table.
    b) Write the intermediate code for the given expression a= b+c*d+e and build the triples and quadruples presentation for the expression.

14. Write about fully-static run-time environments in detail.

15. How code generation is done for logical expressions and procedures? Explain.

16. Check whether following grammar is CALR(1) or not. A→(A)|a and parse the following input string : (a)

17. Write about
a) Translation Process.
b) Activation record.
c) Regular Expressions.

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