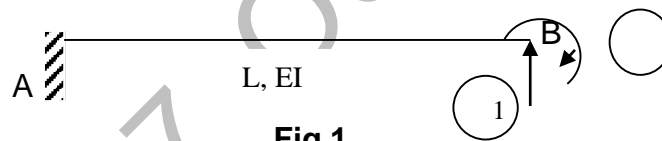


FACULTY OF ENGINEERING**B.E. (Civil) VI – Semester (CBCS) (Main) Examination, November 2020****Subject: Theory of Structures – II****Time: 2 Hours****Max.Marks: 70****Note: Answer any five questions form Part-A and any four questions from Part-****B****PART – A (5x2 = 10 Marks)**

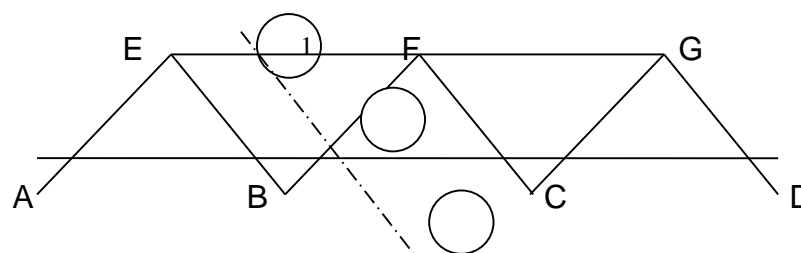
1. What is absolute Maximum Bending Moment and where it occurs when a series of moving loads are travelling a girder from left to right.
2. Draw ILD of S.F at a section 5m from left end when a unit load is moving on a girder of 9m from left to right.
3. Explain the term Focal Length of a beam.
4. A parabolic cable of 80 m length, central dip 12 m is subjected to a udl of 10 kN/m over entire span. Find the Horizontal Thrust.
5. Develop the flexibility matrix for a beam element of length 'l' flexural rigidity 'EI'. Shown in fig(1).

**Fig.1**

6. Explain how the effect due to temperature is considered in statically indeterminate trusses.
7. Develop the stiffness matrix for a truss element of length 'L' and area of cross section 'A'.
8. What are the properties of Stiffness matrix?
9. Using Direct Element Method develop the stiffness matrix for a two span continuous beam.
10. What are the Limitations of STAAD Pro?

PART – B (4x15 = 60 Marks)

11. A series of moving loads of magnitude 80 kN, 120 kN, 120 kN & 60 kN with 80 kN leading are moving on a girder of span 16 m from left to right. The distances between these loads are 2.5 m, 1.5 m and 2.5 m respectively. Find Absolute maximum S.F and Absolute maximum B.M in the girder.
12. Draw the ILD for the indicated members of the truss shown in Fig.(2).

**Fig.2**

...2

13. Analyze the Beam shown in Fig. (3) by Flexibility method.

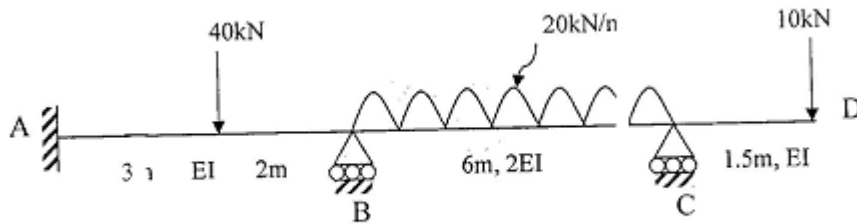


Fig.3

14. Analyze the truss shown in Fig.(4) using Stiffness method. Also find the forces in all the members of truss. Take AE constant for all members.

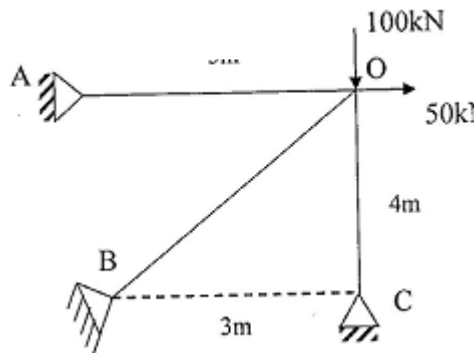


Fig. 4

15. A udl of intensity 6kN/m spread over a length of 4 m is moving on a girder of span 16 m from left to right. Draw the curves of Bending moment and Shear force for the girder.

16. Find the maximum tension in the cable shown in Fig.(5).

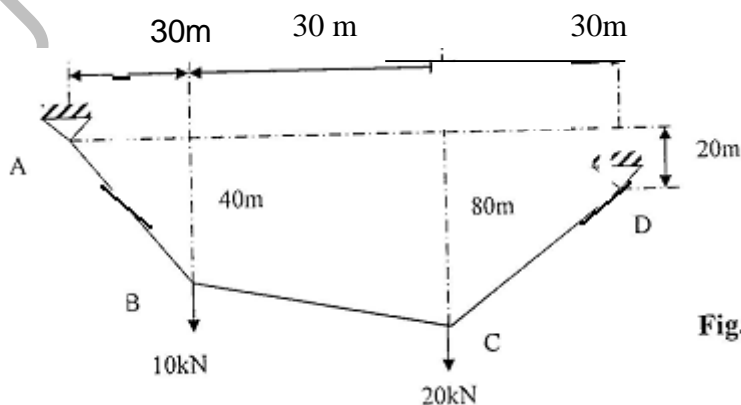


Fig.5

17. Write short notes on the following.

- Envelope of Parabola.
- Lack of Fit in trusses.
- STAAD Pro Software for Analysis.

FACULTY OF ENGINEERING

B.E. 4/4 (EEE) VI-Semester (CBCS) (EIE)(Main) Examination, November 2020

Subject : Process Control

Time : 2 Hours

Max. Marks: 70

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

PART – A (5 x 2 = 10 Marks)

- 1 What are the elements of Process Dynamics?
- 2 A temperature sensor modeled as time constant process is suddenly subject to a sudden change in temperature from 0°C to 100°C. If it has time constant of 5 seconds, what temperature will be indicated after 4 seconds?
- 3 Define Integral Controller mode.
- 4 Explain Automatic Controller in an example.
- 5 What is Static Error?
- 6 What are the advantages of Closed Loop Control?
- 7 Explain the operation of Solenoid Valve.
- 8 What is the necessity of an Actuator in Final Control Analysis?
- 9 What is PLC Scan?
- 10 Write the Ladder Logic for an “AND” Gate.

PART – B (4 x 15 = 60 Marks)

- 11 (a) What is Gibb’s Phase Rule? Explain its relevance in Process Instrumentation.
(b) With a Schematic Diagram explain Pressure Element Lag.
- 12 (a) Draw a block Diagram and explain Two position controller.
(b) The input error signal for PI Controller is sinusoidal in nature. Prove that Phase Lag is a function of reset time.
- 13 What is meant by Tuning of Controller? Explain Ziegler-Nichol’s Tuning method for Controller setting.
- 14 (a) Explain the characteristics of Control Valve.
(b) With a neat diagram explain Hydraulic Actuator.
- 15 (a) With a neat diagram explain Relay Controller.
(b) Explain the Programming Pattern of PLC with suitable example.
- 16 (a) Draw the block diagram of PLC and explain its principle of operation.
(b) An equal percentage valve has a maximum flow of 50 cm³/s and a minimum of 2 cm³/s. If the full travel is 3 cm. Find the flow at 1 cm opening.
- 17 Write short notes on the following:
 - (a) Characteristics of Physical systems
 - (b) PID Controller
 - (c) Electrical Actuator

FACULTY OF ENGINEERING

BE VI Semester (CBCS) (ECE) (Main) Examination, November 2020

Subject: Antennas and Wave Propagation

Time: 2 Hours

Max. Marks: 70

Note: Answer any five questions in Part-A, & answer any four questions from Part-B

PART – A (5 x 2 = 10 Marks)

1. Define HPBW and BWFN of an antenna
2. The radiation intensity of a certain antenna is $2\sin\theta \sin^3\varphi$ for $(0 \leq \theta \leq \pi$ and $0 \leq \varphi \leq \pi)$ and zero elsewhere. Determine the directivity of the antenna.
3. List out applications of Loop Antenna
4. What is quarter wave monopole
5. List out the advantages and limitations of micro strip antennas.
6. State Babinet's Principle
7. Calculate the Directivity of a given Linear end fire, uniform array of 10 Elements with a separation of $\lambda/4$ between the elements.
8. What is the main disadvantages of binomial array?
9. Calculate the Value of Frequency at which an EM Wave must be propagated through the D-region with an index of refraction of 0.5 and an electron density of 3.24×10^4 electronics/m³
10. If the critical frequency of ionized layer is 2MHz, find the electron density of the Layer?

Part B (4 x 15 = 60 Marks)

11. a) With the help of neat diagram explain the radiation mechanism of antenna.
b) Define (i) Directivity (ii) Gain (iii) Beam Efficiency
(iv) Antenna Temperature (v) Isotropic Radiator.
12. Derive expressions for the electric and magnetic components of Hertzian dipole.
13. What is Yagi-uda Antenna? Explain the construction and principle involved with its characteristics?
14. a) If a helical antenna has a spacing turns 0,05m, diameter 0.1m, number of turns equal to 20 and operates at 200MHZ. Find half-power beam width and directivity.
b) Design and explain the working principle of a microstrip antenna.
15. a) What is binomial array antenna? What its basic principle of working
b) Explain the Gain Measurement 3-antenna method?
16. Write short notes on
a) Lens antenna b) Friis transmission formula
17. a) Explain in detail about Ground wave propagation
b) Describe the following with neat sketches
i) Duet propagation ii) Skip Zone

FACULTY OF ENGINEERING

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

Subject: Hydraulic Machinery and Systems

Time: 2 Hours

Max. Marks: 70

Note: Answer any five questions in Part-A, & answer any four questions from Part-B.

PART-A (5x2= 10 Marks)

1. Classify any three types of hydraulic machines?
2. A jet of water of 100mm diameter impinges normally on a fixed plate with a velocity of 30 m/s. The force exerted on the plate is
 - a) 7.07 KN
 - b) 7.70 kN
 - c) 7.71 kN
 - d) 7.17 Kn
3. Differentiate between ideal and actual indicator diagrams.
4. Define air vessel. Also write the percentage of work saved by fitting an air vessel in single acting and double acting reciprocating pumps?
5. Define priming? Explain in detail.
6. Briefly explain cavitation and its effect on pump
7. Explain unit quantities in Hydraulic turbines.
8. Define gross head, net head and efficiency of turbine.
9. Explain the selection criteria for pumps and actuators.
10. Explain the construction details of oil reservoir .

PART- B (4x15=60 Marks)

11. a) Find an expression for the efficiency of a series of moving curved vanes when a jet of water strikes the vanes at one of its tips.?
 - b) A jet of water of diameter 40 mm moving with a velocity of 20 m/s strikes a fixed plate in such a way that the angle between the jet and the plate is 60° . Find the force exerted by the jet on the plate (i) in the direction normal to the plate (ii) in the direction of jet.
12. a) What is negative slip in reciprocating pump? Explain with neat sketches the function of air vessels in reciprocating pump.
 - b) List out the differences between centrifugal pump and reciprocating pump.
- 13 A centrifugal pump having outer diameter equal to two times the inner diameter and running at 1200 Rpm 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 the 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.

14. A Pelton wheel is to be designed for the following specification. Power = 735.75 kW, S.P Head= 200 m, speed = 800 rpm, $\eta_o = 0.86$ 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.

15.a) Explain the working principle of pelton turbine with the help of neat sketch?
b) Differentiate between impulse and reaction turbines.

16. With a neat diagram, explain the working of single acting and double acting actuators.

17.a) Explain about Classification of forces based on impact of jet on vanes.
b) Variation of pressure head in the suction pipe due to acceleration of piston.
c) Explain gear pump and vane pump.

FACULTY OF ENGINEERING

B.E. (Prod.) VI-Semester (CBCS) (Main) Examination, November 2020

Subject : Modern Machining & Forming Methods

Time : 2 hours

Max. Marks : 70

Note: Answer any five questions from Part-A, & any four questions from Part-B.

PART – A (5 x 2= 10 Marks)

1. Write advantages and limitations of AJM.
2. What are the abrasive materials used in USM?
3. What are the functions and characteristics of electrolyte used in ECM?
4. Distinguish between wire EDM and EDM.
5. State the advantages of electron beam machining process.
6. What are various sources of laser?
7. What are the advantages of rubber pad forming over conventional forming?
8. What is the effect of standoff distance in explosive forming?
9. Differentiate between compression and radial draw forming.
10. What are the applications of spinning?

PART – B (4 x15 = 60 Marks)

11. a). Describe the process of USM with the help of a neat sketch.
b). Derive the expression for metal removal rate in abrasive jet machining of brittle materials.
- a). Discuss the advantages of EDM compared to other unconventional methods with respect to:
 - i) MRR
 - ii) Accuracy
 - iii) Surface finish.
- b). Describe the principle of ECM process. List the advantages and applications.

12. a). Explain the principle and working of laser beam machining. Give limitations and applications.
- b). Explain what is meant by transferred and non-transferred mode of plasma arc. What are the advantages of each process?
13. a). Explain the principle and limitations of contact type of explosive forming process.
- b). What do you understand by 'HERF'? Write the advantages and applications of HERF.
14. a). Differentiate between backward spinning and forward spinning.
- b). Describe the process of water hammer forming. What are its advantages and limitations?
15. a). Sketch and describe any two types of tool feeding systems used in Ultrasonic machining process.
- b). Explain the process parameters of Electro Chemical Machining process.
16. Write short notes on:
- a) Hydro-forming
 - b) Electron Beam Machining.
 - c) Hydrostatic Forming

FACULTY OF ENGINEERING

B. E. (CSE) VI – Semester (CBCS) (Main) Examination, November 2020

Subject: Web Programming

Time: 2 hours

Max. Marks: 70

Note: Answer any five questions from Part-A, & any four questions from Part-B.

PART – A (5 x 2 = 10 Marks)

1. Explain the difference between Get and Post request methods.
2. Write html code to create image as hyper link.
3. How comments can be represented in XML?
4. What is XPATH?
5. Explain closures in java script.
6. What is AJAX?
7. How do we call one servlet from another servlet?
8. What are the life cycle methods of JSP?
9. Write syntax to declare an array in PHP?
10. Is PHP a strongly typed language?

PART – B (4 x 15 = 60 Marks)

11. (a) Create a HTML document that describes ordered list of at least 3 popular books. The bullet for each book must be a small image of books cover.
(b) Explain all controls that are created with the <input> tag with examples, which are used for text collection.
12. (a) What is the purpose of XML Schema?
(b) Explain XML document structure with an example.
13. (a) Explain about Events and Event handling is done in Java script with suitable example.
(b) What is PHP? List out various advantages of PHP.
14. (a) What are the major features of servlet? Explain in detail about session management with an example.
(b) Explain the difference between jsp include directive and include action tag.
15. (a) Explain advantages of jsp over Servlets.
(b) Create a dynamic web page using JSP to accept date of birth (DOB) from user and display age.
16. (a) Develop PHP code to connect with database and create Employee(Eid, Ename, Salary) table.
(b) Explain Database connectivity using Perl.
17. Explain the following:
 - (a) Difference between java script and Ajax.
 - (b) JSP Implicit variables.
 - (c) Purpose of XML DTD.

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

Subject : Compiler Construction

Time : 2 Hours

Max. Marks: 70

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

PART – A (5x4 = 10 Marks)

1. Define Bootstrapping
2. What is input buffering?
3. What is the difference between top-down and bottom-up parsing?
4. Explain about SR and RR conflicts in parsing
5. What is the difference between parse tree and syntax tree?
6. Write about type-checking with example
7. Define symbol table
8. Write about storage organization
9. Explain the concept of peephole optimization with an example?
10. What is basic block? Give example

PART- B (4x15=60 Marks)

11. Explain in detail about issues in code generator.
12. Explain about :
 - (a) Heap management
 - (b) Garbage collection
13. Consider the following expression
 $a+a*(b-c)+(b-c)*d$
Draw the following for above expression
 - a) DAG
 - b) three address code
 - c) quadruples
 - d) triples
14. Construct CALR parsing table for the following grammar
 $S \rightarrow CC$
 $C \rightarrow cC \mid d$
15. Check whether the below given grammar is LL(1) grammar or not
 $S \rightarrow Aa \mid bAc \mid Bc \mid bBa$
 $A \rightarrow d$
 $B \rightarrow d$
16. List and explain major data structures used in compiler.
17. Write short notes on
 - (a) LEX
 - (b) YACC
 - (c) Translation of expressions

FACULTY OF ENGINEERING

BE VI Semester (CBCS) (A.E) (Main) Examination, November 2020

Subject: Computer Aided Design Analysis & Manufacturing

Time: 2 Hours

Max.Marks: 70

Note: Answer any five question from Part-A, & any four questions from Part-B.

PART – A (5x2 = 10 Marks)

1. What is Interpolation and Approximation curves?
2. State any four Wire-frame Entities.
3. Differentiate Analytical and Synthetic surfaces.
4. Explain Translation.
5. Describe the IGES format.
6. Write note on Design review.
7. Differentiate between CNC and DNC.
8. What is the advantage of Canned cycle?
9. Mention the applications of Reverse Engineering.
10. Define FMS and mention its advantages and limitations.

PART – B (4 x 15 = 60)

11. Construct Bezier curve with four coordinates points A (1,1), B (2,3) C(4,3) and D (3,1).
12. Explain C-rep and B-rep approaches of solid modeling.
13. (a) Explain various CAD data base.
(b) Discuss about the importance of Mechanical Tolerancing.
14. (a) What are the G codes and M codes? Explain with a program in CNC programming.
(b) The component to be machined is shown in figure. Write a program using Canned cycles to drill all the holes as shown in figure 1.

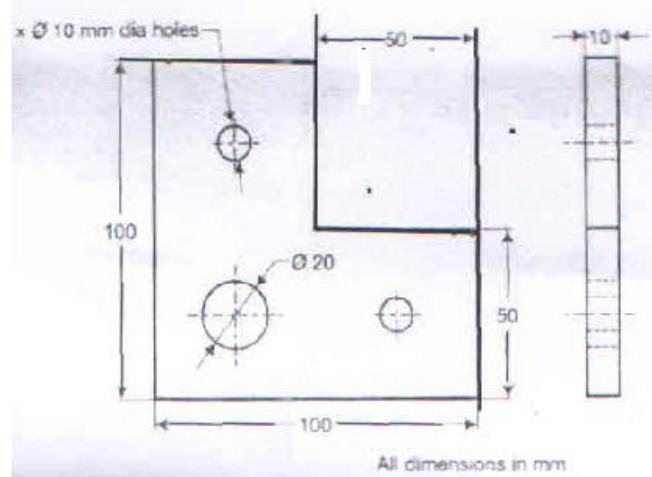
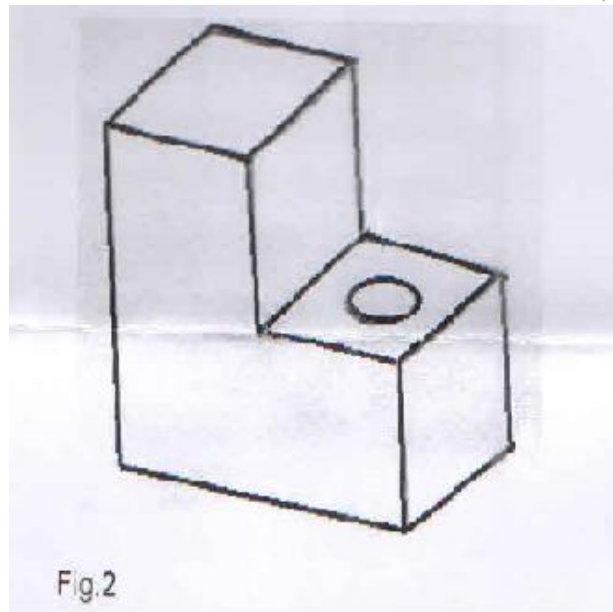


Fig.1

15. (a) What are the difference between retrieval and generative types of CAPP?
(b) Describe basic robot motions with neat sketch.
16. (a) Draw the CSG Tree for the object shown in figure.2.



- (b) Define Bezier curve. Mention the characteristics of the Bezier curve with neat sketch.
17. Write short note on following:
a) STL b) Rapid prototyping technique c) Finite element analysis.