Code No. 11127

FACULTY OF ENGINEERING

B.E. 3/4 (Civil) II-Semester (supply) Examination November / December, 2018

Subject : Theory of Structure - II

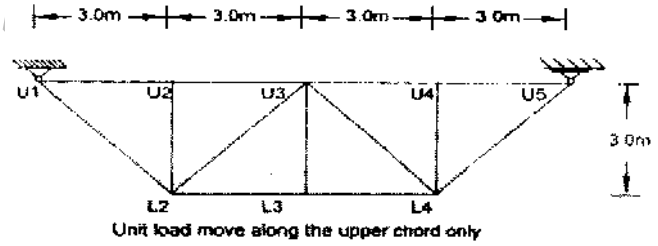
Time : 3 Hours **Max Marks : 75**

Part - A (25 Marks)

1. Define Enveloping Parabola 3
2. Draw influence line diagram for S.F at section 5m from left end of a simply supported beam of 25m span 3
3. A suspension cable of horizontal span 30m, central dip 3m is subjected to a load of 10 kN/m over the entire span. Find the maximum tension in the cable. 3
4. State any three properties of a stiffness matrix. 3
5. Difference between flexibility and stiffness matrix 3
6. State the condition for max. B.M. under any load of a train of wheel loads. 2
7. Develop stiffness matrix for 2D truss element 2
8. What do you understand by the term flexural of a beam? 2
9. What do you understand by stiffening girder? 2
10. List any two assumptions or limitations of structural analysis software STAAD PRO 2

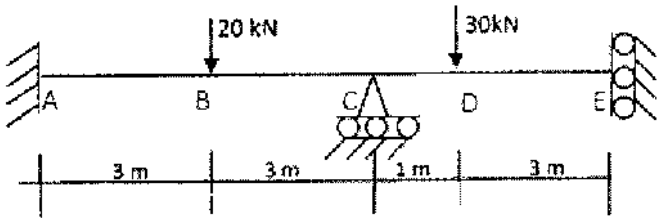
Part - B (5 X 10 = 50 Marks)

11. A u.d.l of 30 kN/m and 6m length is moving on a simply supported girder of 20m span Draw max S.F.D. and max B.M.D
12. Draw the influence lines for axial forces in members U2-U3, L3 - L4, L2 - U2 and L3 -U3 for the part truss shown in figure. Unit load move along the upper chord only



13. Actable supported at its ends 40m apart at the same level carries loads 200 ken, at 10m, 20
    a) the length of the cable and
    b) the cross sectional area required for the cable if the allowable tensile stress is 150 Map.

14. Analyze the continues beam shown in figure using stiffness matrix method. Draw the BMD. EI is constant throughout.



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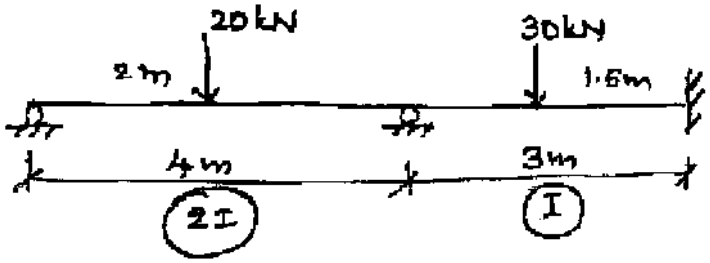
15. Analyze the beam shown in figure by Flexibility matrix method and draw BMD. E is constant



16. A system of loads consisting of 150kN, 120kN and 100kN separated by distance 0.8m, 1m and 1.2m respectively moves from left to right on simply supported girder of span 8m. Find the maximum bending moment which can occur under the 120 kN load.

17. Write short notes on the following :
    a) Equivalent Uniformly Distributed Load (E.U.D.L)
    b) Properties of flexibility matrix
    c) Direct Element Method

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Code No. 11133

FACULTY OF ENGINEERING

B.E. 3/4 (EEE) II – Semester (Suppl.) Examination, November / December 2018

Subject: Switch Gear and Protection

Time: 3 Hours **Max.Marks: 75**

Note: Answer all questions from Part A and any five questions from Part B.

PART – A (25 Marks)

1	What are the advantages of static relays over electromagnetic relays?	2
2	What is meant by plug setting multiplier of an over current relay? How can you change this setting in an induction type over current relay?	3
3	Draw Mho relay characteristics on R-X diagram.	2
4	What are the advantages of microprocessor based over current relays?	3
5	What is meant by percentage differential protection?	2
6	For what type of electrical equipment, ratings and faults Buchholz relay is used?	3
7	Define the terms: i) Recovery voltage ii) RRRV	3
8	Define the terms: i) Symmetrical breaking current ii) Asymmetrical breaking current in circuit breaker.	2
9	Define tower footing resistance.	3
10	Discuss the protection angle of the ground wire.	2

PART – B (5x10 = 50 Marks)

11	a)	With neat diagram explain protective scheme for radial feeders using definite time over current relays.	5
	b)	Derive an expression for universal torque equation.	5
12	a)	What is duality of comparator? Explain in detail how amplitude comparator can be converted into phase comparator with neat diagram.	6
	b)	Explain the protective scheme of over current protective relays.	4
13	a)	Explain protection of generator against i) Inter turn fault ii) Loss of excitation	5
	b)	What is magnetizing inrush current? Explain how transformers can be protected against magnetizing inrush current with neat diagram.	5

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14 a) Write in detail on duties of circuit breaker. 4

b) In a 132 kV system, the inductance and capacitance per phase up to the location of the circuit breaker is 10 H and 0.02μF respectively. If the circuit breaker interrupts a magnetizing current of 20A (instantaneous), current chopping occurs. Determine the voltage which will appear across the contacts of the circuit breaker. Also calculate the value of the resistance which should be connected across the contacts to eliminate the transient restriking voltage. 6

15 What is meant by insulation coordination? Draw and explain in detail typical volt time curve. 10

16 a) Explain how parallel features are protected against over currents using relays. 5

b) Write short notes on different types of distance relays along with R-X diagram. 5

17 Write short notes on the following:

i) Testing of circuit breaker 5

ii) Peterson coil. 5

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Code No. 11136/N

Faculty of ENGINEERING

BE 3/4 (EIE) II Semester (Suppl.) Examination, November / December 2018

Subject: Power Plant Instrumentation

Time: 3 Hours **Max. Marks 75**

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

PART – A (25 Marks)

1. Explain the Combustion process. (2)
2. What are the different types of Boiler? (3)
3. What is Eccentricity? (2)
4. Explain Turbine Supervising System. (2)
5. Explain CO and CO_2 Trimming. (3)
6. Why Hydrogen is preferable then air for Generator cooling. (3)
7. What is Sheel Temperature Monitoring? (2)
8. Explain Fan drive and control. (3)
9. What is Ideal Steam Cycle? (2)
10. What is the function of Control Rods in NPP? (3)

PART – B (50 Marks)

11. With a schematic diagram explain the working of Thermal Power Plan. (10)

12. (a) Explain the various methods for measuring Turbine Speed. (5)
    (b) Explain Rotor and Casing movement and expansion measurement using LVDT. (5)

13. Explain a different types of Superheater control in TPP. What is Pulverizer and Explain Ball and Race Pulverizing Mill with neat diagram. (10)

14. What is the main purpose of Heat Exchangers in the Turbine Monitoring and control? Explain its operation with neat diagram. (10)

15. With a neat diagram explain Piping and Instrumentation diagram of Nuclear Power Plant and explain the importance of control rods in NPP. (10)

16. What is Turbine following mode and Sliding Pressure mode operation. Explain the Working of Distributed Control system in Thermal Power Plant. (10)

17. Write a short note on
    (a) Glad Steam exhausts pressure control. (5)
    (b) Treatment of Flue Gases. (5)

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Code No. 11142

FACULTY OF ENGINEERING

B.E. 3/4 (ECE) II-Semester (Suppl.) Examination, November / December 2018

Subject : Antennas and Wave Propagation

Time : 3 hours **Max. Marks : 75**

Note: Answer all questions from Part-A. Answer any FIVE questions from Part-B.

PART – A (25 Marks)

1 Define retarded potential. 2
2 Distinguish between near and far fields of an antenna. 3
3 What is antenna polarization? 2
4 What are the advantages of patch or microstrip antenna? 3
5 Distinguish between broadside and end-fire arrays. 2
6 Briefly explain about troposcatter propagation. 2
7 What is a Hertzian dipole? 2
8 A radiating element of 1cm carries an effective current of 0.5A at 3GHz. Calculate the radiated power. 3
9 Sketch the field pattern of a broadside array of four isotropic point sources of the same amplitude and phase. 3
10 Write is the effect of earth on vertical patterns. 3

PART – B (50 Marks)

11 a) For the point source with i) sinusoidal and ii) unidirectional cosine squared radiation patterns determine radiated power and directivity. 5
b) Define the following terms as referred to an antenna
i) beam efficiency ii) effective aperture area iii) radiation intensity
iv) antenna gain and v) radiation resistance 5

12 a) Explain the working principle of a helical antenna in its normal and axial modes. 6
b) Show that the maximum effective aperture of a short dipole is $0.119\lambda^2$. 4

13 Discuss the constructional details, features and applications of V-antenna and rhombic antenna. 10

14 a) What is the principle of pattern multiplication? Explain with suitable examples. 5
b) Write a note on Hansen-Woodyard array. 5

15 a) Explain the following terms with respect to wave propagation.
i) Critical frequency ii) MUF iii) Optimum working frequency
iv) Virtual height and v) Skip distance 5
b) Find MUF for a layer with $N_{max} = 10^{12} / m^3$, h = 450km and D = 1500km 5

16 a) By deriving Frii's transmission formula calculate the minimum transmitted power if 5 mW power is to be received when the transmitting and receiving antennas are separated by a distance of 200λ and have directive gains of 25 dB and 18 dB, respectively. 7
b) Describe a method to measure the gain of an antenna. 3

17 Write explanatory notes on : 10
a) Effect of interelement phase shift on beam scanning
b) Bionomial arrays

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Code No. 11146

FACULTY OF ENGINEERING

BE. 3/4 (Mech / A.E) II – Semester (supply) Examination, November / December 2018

Subject: CAD/CAM

Time: 3 Hours **Max. Marks: 75**

Note: Answer all Questions from Part-A, & any Five Questions from Part-B.

PART – A (25 Marks)

1. Write the parametric equation of a B-Spline surface of size NxM in parameters U&V
2. What are the benefits of Computer Aided Design over Conventional Design Process ?
3. List any four surface entities
4. Differentiate between NC & CNC
5. Give basic Processes involved in any rapid prototyping technique
6. What is CMM List various elements
7. Differentiate between FANUC & SINUMERIC Controller
8. The non – Parametric implicit equation of a circle with a centre at the origin and radius R is given by $x^2 + Y^2 = R2$ Find the circle parametric equation
9. 5^{th}, 6^{th} and 8^{th} digit of MICLASS classification represents _____
10. Explain Turnkey CAD/CAM systems.

PART – B (50 Marks)

11. a) Describe PDES format, Explain where it is used.
    b) Fit a Bazier curve with control points $P_o(1,1)$, $P_1(3,6)$, $P_2(5,7)$ and $P_3(7,4)$ and find out the points corresponding to u = 0.4 and 0.6 where U is a parameter 0,u,1.

12. a) Explain C-rep and B-rep approaches of solid modeling.
    b) How NURBS are represented. Give its advantages in geometric modeling.

13 a) Explain CAD data base types with an example.
    b) Explain canned cycles with examples.

14 a) What are the factors involved in robot application planning.
    b) Describe features & elements of NC.

15 a) What is Adaptic control. Differentiate between ACC & ACO.
    b) Describe the arm & body motions of a Cartesian robot.

16 a) What is GT. Describe the OPTIZ coding system?
    b) Explain CAD/CAM integration in detail.

17 Write short notes on
    a) In process Measurement
    b) Reverse Engineering
    C) CAI & QC

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Code No. 11150

FACULTY OF ENGINEERING

B.E. 3/4 (Prod) II – Semester (supply) Examination, November / December 2018

Subject: TURBO MACHINERY

Time: 3 Hours **Max. Marks: 75**

Note: Answer all Questions from Part-A, & any Five Questions from Part-B.

PART – A (25 Marks)

1 Obtain an expression for force exerted by a jet of water on a moving vertical plate in the direction of the jet.
2 Explain major losses in turbo machines?
3 Write short notes on axial flow compressor.
4 What is NPSH? Explain cavitations and its effects on the performance of a centrifugal pump.
5 Define specific quantities
6 Differentiate between axial flow machine and radial flow machine?
7 What are the advantages of compounding in steam turbines?
8 Explain degree of freedom
9 List out the application of gas turbine
10 Explain the effect of regeneration on gas turbine efficiency?

PART – B (50 Marks)

11 A jet of water of diameter 50 mm moving with a velocity of 25m/s enters tangentially a stationary curved vane without shock and is deflected through an angle of 45^o. Because of friction over the surface, the water leaving the vane has only 80% of its original velocity. Find the magnitude and direction of the resultant force exerted on the jet.

12 A centrifugal pump running at 1200 rpm delivers water. The diameter of impeller at inlet is 100 mm and at outlet is 300 mm. The width of the impeller is 50 mm at inlet and 20 mm at outlet. The blade angle outlet is 30^o. If the velocity of flow at outlet. Also find the head developed if the man metric efficiency is 75%.

13 (a) Draw the schematic diagram of a centrifugal compressor stage indicating the names of its principle parts.
(b) List out the differences between centrifugal pump and reciprocating pump

14 A Peloton wheel develops 5800 kW under a net head of 180 m at a speed of 195 rpm. Find the discharge through the turbine, the wheel diameter, the number of jets required and the specific speed. Use the following assumptions : overall efficiency 86% D/d= 12m ø = 0.45 and C_v = 0.985.

15 a) Explain how the quality at turbine exhaust gets restricted?
b) Explain the T – S diagram of ideal regenerative cycle. Why is the efficiency of this cycle equal to carnot cycle? Whys is this cycle not practicable?

16 (a) With a neat layout diagram, explain the working of Braxton cycle.
(b) How does an open cycle gas turbine differ from a closed cycle gas turbine? State five points highlighting the difference.

17 (a) Obtain the work done and draw velocity triangle of Peloton turbine.
(b) Expression for impact of jet on moving curved vane.
(c) Methods of improving thermal efficiency of a gas turbine.

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Code No. 11158

FACULTY OF ENGINEERING

B.E. 3/4 (CSE) II – Semester (Suppl.) Examination, Nov. / Dec. 2018

Subject: Compiler Construction

Time: 3 Hours **Max.Marks: 75**

Note: Answer all questions from Part – A and any five questions from Part – B.

PART – A (25 Marks)

1 Differentiate between pass and phase. (2)

2 Write a regular expression for unsigned numbers. (2)

3 Eliminate left factoring from the following grammar

$S \rightarrow iEtS \mid iEtSeS \mid a$

$S \rightarrow b$ (2)

4 Define S-attributed and L-attributed grammars. (3)

5 Specify the applications of SDT. (2)

6 Find first and follow set for the following grammar. (3)

$S \rightarrow aBDh$

$B \rightarrow cC$

$C \rightarrow bC \mid x \in$

$D \rightarrow EF$

$E \rightarrow g \mid x \in$

$F \rightarrow f \mid x \in$

7 Construct DAG for the expression a + a $*$ (b-c) + (b-c) $*$ d. (3)

8 What is basic block? (2)

9 Consider the CFG

$S \rightarrow SS+ \mid SS* \mid a$

Give the left and right most derivation for the string aa+ a $*$. (3)

10 What is an Activation record and what it contains? (3)

PART – B (5x10 = 50 Marks)

11 Show the translation process of compiler for the given expression (10)

Position : = initial + rate □ 100.

12 Construct the predictive parse table for the following grammar and show the moves made by the parser on input w = i $*$ i + i $.

$E \rightarrow TE'$

$E' \rightarrow +TE' \mid \in$

$T \rightarrow FT'$

$T' \rightarrow * FT' \mid \in$

$E \rightarrow (E) \mid i$ (10)

13 Translate the arithmetic expression

- (a+b)*(c+d)+(a+b+c) into

a. Syntax tree
b. Three address code
c. Quadruple
d. Triples
e. Indirect triples (10)

14 Explain how to compute data flow equations using live variable analysis by considering any flow graph. (10)

15 Consider the grammar

S—> (L)/a

L—>L, S/S

Parse the input string (a, (a, a)) using SLR parser. (10)

16 Explain the different code optimization techniques with examples. (10)

17 Write short notes on:

a) Lexical analyzer generator lex. (5)

b) Syntax error handling. (5)

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Code No. 11163

FACULTY OF ENGINEERING

B.E. 3/4 (IT) II-Semester (Suppl.) Examination, November / December 2018

Subject : Compiler Construction

Time : 3 hours **Max. Marks : 75**

Note: Answer all questions from Part-A. Answer any FIVE questions from Part-B.

PART – A (25 Marks)

1	Define cross complier.	2
2	What is difference between analysis and synthesis?	2
3	Define and explain purpose of left factoring.	2
4	Explain about syntax diagram with an example.	3
5	Explain about activation record.	3
6	What is P-code? Explain.	3
7	Explain about symbol table.	3
8	Write rules to construct first and follow sets.	3
9	What is difference between DFA and NFA?	2
10	What is difference between top-down and bottom-up parsing?	2

PART – B (50 Marks)

11 Explain all phases in translation process in detail with help of a diagram. 10

12 Convert the following regular expression into DFA using Thompson's construction method. $(a+b) * a$ is given regular expression. 10

13 Construct LL(1) predictive parsing table for the following grammar : 10

$E \rightarrow E + T$

$T \rightarrow TF|F$

$F \rightarrow F * |a|b$

14 Write the closure of LR(0) items for the given grammar and construct DFA. 10

$S' \rightarrow S$

$S \rightarrow (S)\ S|E$

15 Explain various parameter passing mechanisms in run-time environment. 10

16 a) Explain about code generation for if and while statements. 5

b) Explain concept of 3-address code with an example. 5

17 Write short notes on :

a) Syntax of tiny language 4

b) Content-free grammar 3

c) EBNF notation 3

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Code No. 11374 / CBCS

FACULTY OF ENGINEERING

B.E. I - Semester (CBCS)(Backlog) Examination, November / December 2018

Subject : Engineering Mathematics - I

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

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

PART – A (20 Marks)

1 If eigen values of a matrix A are 0, 1, -1 then find the characteristic polynomial of the matrix A^2.

2 Find the index of the quadratic form

$$x_1^2 + 5x_2^2 + x_3^2 + 2x_1x_2 + 6x_1x_3 + 2x_2x_3$$

3 Determine the nature of the series $\sum_{n=1}^{\infty} \frac{4+3n}{5n-8}$.

4 For which values of p the series $\sum_{n=1}^{\infty} \left(\frac{\sqrt{n+1} - \sqrt{n}}{n^p} \right)$ is convergent.

5 Find 'c' value of Rolle's mean value theorem for the function $f(x) = x(x+3)e^{-x/2}$ in $[-3, 0]$.

6 Find the envelope of the family of curves $y = mx - 2am - am^3$ where m is the parameter.

7 If $x = u(1+v), y = v(1+u)$ then evaluate $\frac{\partial(x, y)}{\partial(u, v)}$.

8 Show that $\lim_{(x,y)\to(0,0)} \frac{2x^2y}{x^4 + y^2}$ does not exists.

9 Find the equation of the tangent plane to the surface $x^2 + y^2 - z = 0$ at P (2, -1, 5).

10 Evaluate $\nabla^2 \left(\frac{x}{r^3} \right)$ where $r^2 = x^2 + y^2 + z^2$.

PART – B (50 Marks)

11 (a) Verify Cayley-Hamilton theorem for the matrix (5)

$$A = \begin{bmatrix} 1 & 2 & -2 \\ 1 & 1 & 1 \\ 1 & 3 & -1 \end{bmatrix}$$ and hence find A^{-1}.

(b) Test for consistency and solve

$x - y + z = 9$, $x - 3y + 4z = 25$, $2x + 6y + 4z = 10$. (5)

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12 (a) Discuss the nature of the series (5)

$$1+\frac{3}{7}x+\frac{3.6}{7.10}x^2+\frac{3.6.9.12}{7.10.13.16}x^4+.....$$

(b) Test the convergence of the series $\sum_{n=1}^{\infty}\frac{(-1)^{n-1}.n}{5n+1}$. (5)

13 (a) Find the centre of curvature of the curve y= x^3-6x^2+3x+1 at P(1, -1). (5)

(b) State Cauchy's mean value theorem and find 'c' of this theorem to the functions

$$f(x)=\frac{1}{x^2}, g(x)=\frac{1}{x} \text{ on [3, 6].} \quad (5)$$

14 (a) If $f(x,y)=\begin{cases}\frac{x^3-y^3}{x^2+y^2}, & (x,y)\neq(0,0)\\ 0, & (x,y)=(0,0)\end{cases}$ then evaluate f_x(0, 0) and f_y(0, 0). (5)

(b) Discuss the maxima and minima of the function (5)

$$f(x,y)=x^3+y^3-12x-3y+20$$

15 Using Green's theorem, evaluate (10)

$\int_C (y-\sin x)\,dx+\cos x\,dy$ Where C is the triangle enclosed by the lines y = 0, $x = 2\pi$ and $\pi y = 2x$.

16 (a) Find all asymptotes of the curve $x^2=\frac{y+2}{y-2}$. (5)

(b) If $a_n > 0$ and $\sum_{n=1}^{\infty}a_n$ is convergent then determine the nature of the series $\sum_{n=1}^{\infty}\frac{a_n}{n}$. (5)

17 Verify stokes theorem for $\vec{F}=(y-z+2)i+(yz+4)j-xzk$ Where S is the surface of the cube $x=0,\quad y=0,\quad z=0$ and z = 2 above the xy plane. (10)

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