Code No: RT22011 **R13** SET - 1

II B. Tech II Semester Regular/Supplementary Examinations, April/May-2017
BUILDING PLANNING AND DRAWING
(Civil Engineering)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answer any **Three** the question in **Part-A**
3. Answer **One** Question from **Part-B**

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PART –A

(14×3 = 42M)

1. a) What is the role of building bye-laws in planning a city?
   b) Explain the minimum size requirements for the following components:
   Wall thickness, column and beam sizes, height of a room, size of stair, foundation, plinth level, height of a building.

2. a) Explain clearly different principles involved in planning a residential building?
   b) What are the different points normally given consideration while planning a residential building? Explain with examples?

3. a) Plan a Post office in a village in 250 sq.m area. Take all environmental and economic factors into consideration while planning?
   b) Draw plan of the above building? Assume all the necessary data suitably.

4. a) Draw the plan, elevation and isometric view of odd course of 2 brick Flemish bond?
   b) Differentiate between stone and brick masonry?

5. Draw sign conversion for i) Brick ii) Glass iii) Stone iv) Timber v) Concrete

PART –B

(1×28 = 28M)

6. a) Draw plan and sectional elevation of a paneled door of size 1.2X2.1m. Indicate all features.
   b) Draw a detailed elevation of a king post truss of 5m clear span. Indicate all features.
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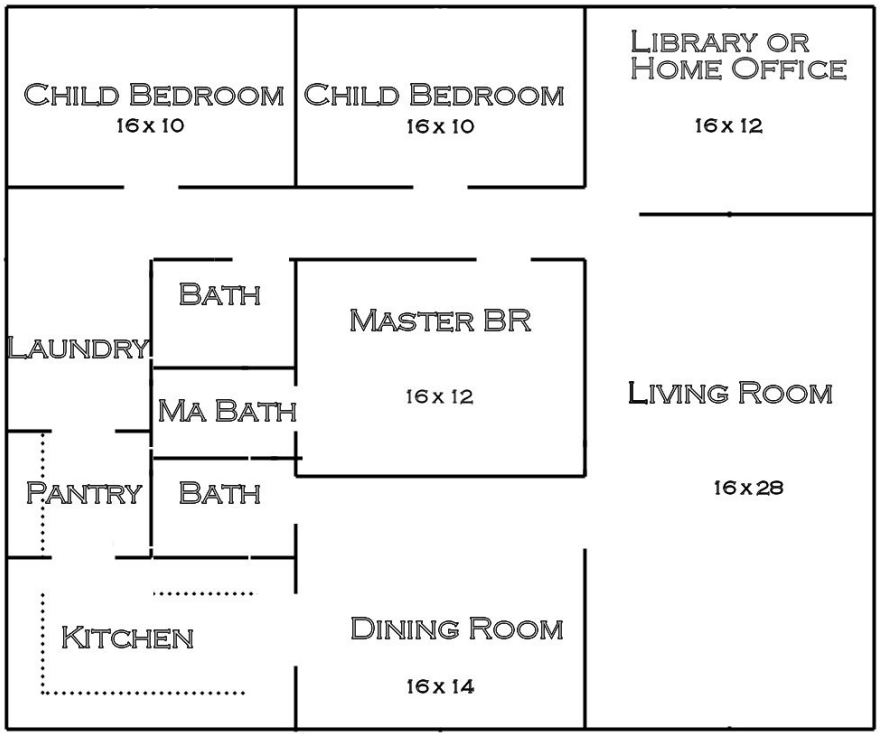
7. a) Draw the dimensioned plan and elevation for the given line plan. Assume all suitable data.



b) Take suitable section and draw sectional elevation for the above given plan. Assume all suitable data.

Code No: RT22011 **R13** SET - 2

II B. Tech II Semester Regular/Supplementary Examinations, April/May-2017
BUILDING PLANNING AND DRAWING
(Civil Engineering)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answer any **Three** the question in **Part-A**
3. Answer **One** Question from **Part-B**

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PART –A

(14×3 = 42M)

1. a) Classify different type of buildings as per bye-laws? And explain the function of each type of building along with examples?
   b) Explain about different minimum sizes of components in a building as per bye-laws?

2. a) Explain how orientation of building is done? And what are the factors influencing that?
   b) Explain the influence of open places in planning a residential building? Also explain the importance of the same?

3. a) Plan a bank in open space 300 sq.m. in a town? Explain different components involved in planning?
   b) Draw the dimensioned plan of the above building with all features? Assume all the necessary data suitably.

4. a) What is the significance of sign conventions in building drawing? Explain with examples?
   b) Draw plan, elevation, and isometric view of 2 brick English bond for odd courses?

5. Draw plan for
   a) Coupled roof
   b) Collar roof

PART –B

(1×28 = 28M)

6. a) Draw plan and sectional elevation of a glazed window of size 1.8X1.1m. Indicate all features.
   b) Draw a detailed elevation of a Queen post truss of 5m clear span. Indicate all features.

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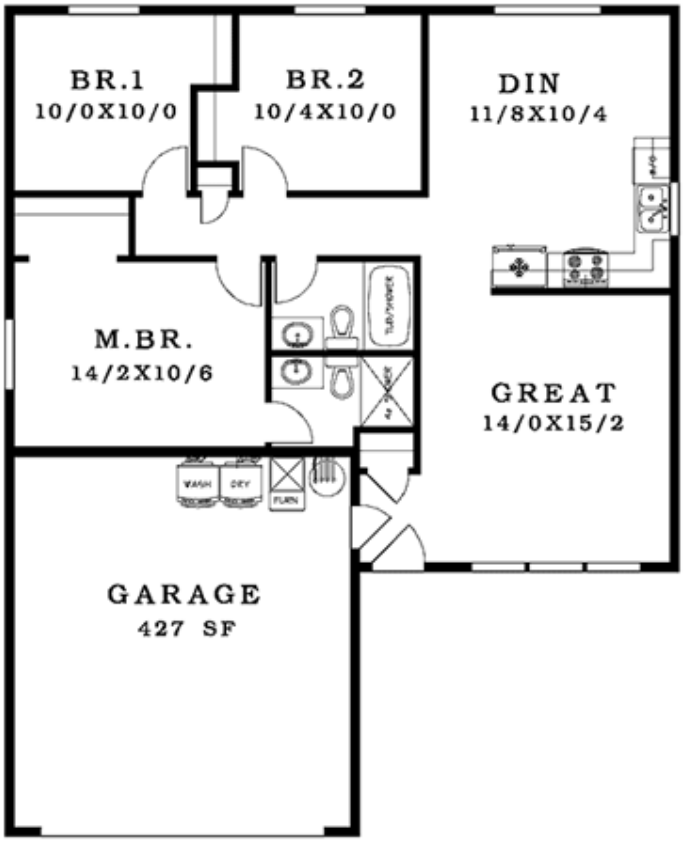
7. a) Draw the dimensioned plan and elevation for the given line plan. Assume all suitable data.



b) Take suitable section and draw sectional elevation for the above given plan. Assume all suitable data.

Code No: RT22011 **R13** SET - 3

II B. Tech II Semester Regular/Supplementary Examinations, April/May-2017
BUILDING PLANNING AND DRAWING
(Civil Engineering)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answer any **Three** the question in **Part-A**
3. Answer **One** Question from **Part-B**

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PART –A

(14×3 = 42M)

1. a) As per climatic conditions, how India is made is made into different zones? Also explain difference in planning?
   b) State the significance of building bye-laws?

2. a) Explain the role of roominess and grouping in planning a residential building? Give some examples?
   b) What are the different buildings will fall under residential buildings category? How they are differentiated?

3. a) Explain the planning of a hotel in 500 sq. m area in a district head quarters. Explain various rooms/components involved in planning?
   b) Draw a dimensioned plan of the above building along with all features? Assume all the necessary data suitably.

4. a) Explain how the sign convention will be done for different type of metals?
   b) Draw plan, elevation and isometric view of 1½ brick English bond for even courses?

5. Draw a plan for
   a) Glazed window
   b) Panelled window

PART –B

(1×28 = 28M)

6. a) Draw plan and sectional elevation of a paneled and glazed door of size 1.2X2.1m. Indicate all features.
   b) Draw a detailed elevation of a king post truss of 6 m clear span. Indicate all features.
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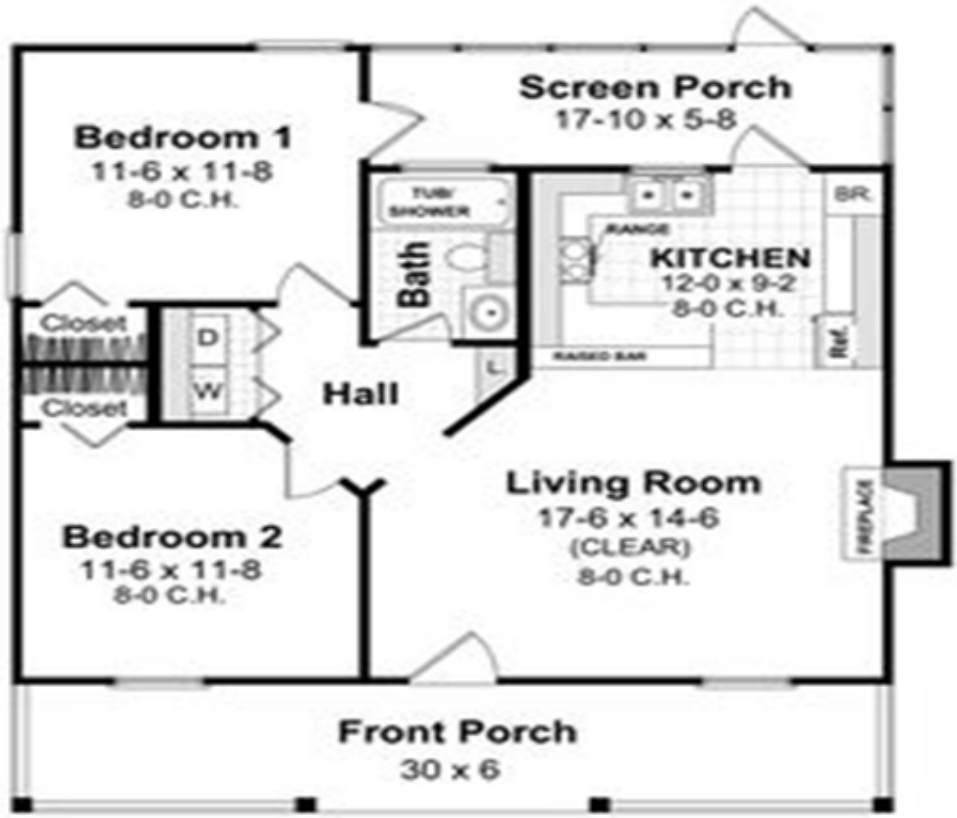
7. a) Draw the dimensioned plan and elevation for the given line plan. Assume all suitable data.



b) Take suitable section and draw sectional elevation for the above given plan. Assume all suitable data.

Code No: RT22011 **R13** SET - 4

II B. Tech II Semester Regular/Supplementary Examinations, April/May-2017
BUILDING PLANNING AND DRAWING
(Civil Engineering)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answer any **Three** the question in **Part-A**
3. Answer **One** Question from **Part-B**

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PART –A

(14×3 = 42M)

1. a) Explain about Floor space index and Floor area ratio?
   b) Explain lighting and ventilation requirements in buildings as per bye-laws?

2. a) Explain different factors considered while selecting a site for residential houses?
   b) State the significance of bye-laws in planning residential houses?

3. a) Plan a College in a city in area 550 sq.m. Explain the planning of this college with reference to different components inside it.
   b) Draw dimensioned plan of the above building? Assume all necessary data suitably.

4. a) Draw the sign convention for 'Earth 'and 'plaster'?
   b) Draw plan, elevation and isometric view of a 2½ brick Flemish bond for even courses?

5. Draw plan and Elevation of a sloped roof building.

PART –B

(1×28 = 28M)

6. a) Draw plan and sectional elevation of a paneled window of size 1.2X1.1m. Indicate all features.
   b) Draw a detailed elevation of a Queen post truss of 6 m clear span. Indicate all features.
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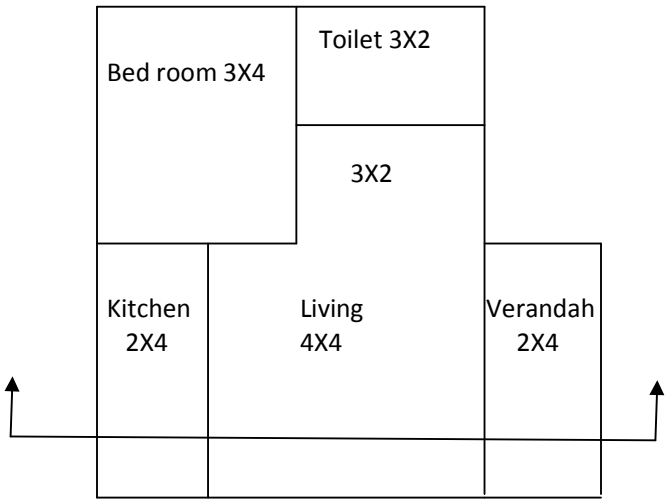
7. a) Draw the plan and elevation of the below given line plan. Assume all suitable data.



All Dimensions are in metres.

b) Draw sectional elevation for the above plan. Assume all the necessary data suitably.

Code No: RT22015 **R13** SET - 1

II B. Tech II Semester Regular/Supplementary Examinations, April/May - 2017
CONCRETE TECHNNOLOGY
(Civil Engineering)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answer **ALL** the question in **Part-A**
3. Answer any **THREE** Questions from **Part-B**

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PART –A

1.	a)	Write about accelerators and retarders.	(4M)
	b)	What is the effect of time and temperature on workability?	(4M)
	c)	Write about Gel space Ratio	(3M)
	d)	What is creep? What are the factors influencing creep?	(4M)
	e)	What is the durability of concrete?	(3M)
	f)	Write about RMC and SCC.	(4M)

PART –B

2.	a)	What are the main compounds in Portland cement and explain their properties?	(8M)
	b)	Mention the different tests to be conducted on aggregate and explain about impact and crushing tests.	(8M)
3.	a)	Write about segregation and bleeding.	(8M)
	b)	What are the factors affecting workability?	(8M)
4.	a)	Explain the relation between compression and tensile strength.	(8M)
	b)	Describe the importance of curing and explain the different methods of curing.	(8M)
5.	a)	Write the factors effecting the modulus of elasticity	(6M)
	b)	What is shrinkage of concrete? Explain about classification of shrinkage.	(10M)
6.	a)	Write the design steps of a mix design by IS code method.	(12M)
	b)	What is the quality control of concrete?	(4M)
7.	a)	Define light weight concrete and explain in detail the classification of light weight concrete.	(8M)
	b)	Write about high density concrete and SIFCON	(8M)
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Code No: RT22015 **R13** SET - 2

II B. Tech II Semester Regular/Supplementary Examinations, April/May - 2017
CONCRETE TECHNNOLOGY
(Civil Engineering)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answer **ALL** the question in **Part-A**
3. Answer any **THREE** Questions from **Part-B**

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PART –A

1. a) Explain the different laboratory tests of cement. (4M)
   b) Explain the various steps in the manufacture of concrete. (4M)
   c) What is Abram's law? (3M)
   d) What is the importance of Non-Destructive tests? (3M)
   e) What are the factors in the choice of mix proportions? (4M)
   f) Write about Fibre reinforced concrete. (4M)

PART -B

2. a) Explain different methods of measurement of moisture content of aggregates. (8M)
   b) Explain briefly the physical properties of ordinary Portland cement. (8M)

3. a) Explain the various steps in the manufacture of concrete. (6M)
   b) Mention the different tests which are commonly adopted to measure workability and explain about any two tests. (10M)

4. a) Explain the Maturity concept of concrete. (6M)
   b) Write about Flexure test and Split tensile test of concrete. (10M)

5. a) Write about elastic properties of concrete. (6M)
   b) What is the relation between creep and time? What is the effect of creep on concrete? (10M)

6. Design a concrete mix of M30 grade. Take standard deviation of 5Mpa.The specific gravities of coarse aggregate and fine aggregate are 2.75 and 2.62 respectively. The bulk density of coarse aggregate is 1610 kg/m^3 and fineness modulus of aggregate is 2.70.A slump of 60 mm is necessary The water absorption of coarse aggregate is 1% and free moisture in fine aggregate is 2% .Design the concrete mix using IS code method. Assume any missing data. (16M)

7. a) Write the difference between High performance concrete and High Density concrete. (8M)
   b) What are the different types of polymers? What is polymer concrete? (8M)
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Code No: RT22015 **R13** SET - 3

II B. Tech II Semester Regular/Supplementary Examinations, April/May - 2017
CONCRETE TECHNNOLOGY
(Civil Engineering)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answer **ALL** the question in **Part-A**
3. Answer any **THREE** Questions from **Part-B**

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PART –A

1. a) What is bulking of sand? (4M)
   b) What are the fresh properties of concrete? (4M)
   c) What are the codal provisions of NDT? (3M)
   d) Write brief note on flexural strength of concrete. (4M)
   e) Define durability of concrete. (3M)
   f) Write about cellular concrete. (4M)

PART -B

2. a) What is the soundness of cement and how it is tested? (6M)
   b) What is alkali aggregate reaction? What are the factors promoting alkali aggregate reaction? (10M)

3. a) Define workability. Write the factors influencing the workability. (12M)
   b) Write about mixing and vibration of concrete. (4M)

4. a) What are the various Non-destructive methods of testing concrete? (6M)
   b) Explain the different tests of hardened concrete. (10M)

5. a) Write the thermal properties of concrete. (8M)
   b) Define creep and explain how creep is measured? (8M)

6. Design a concrete mix of M35 grade. Take standard deviation of 5Mpa.The specific gravities of coarse aggregate and fine aggregate are 2.76 and 2.63 respectively. The bulk density of coarse aggregate is 1610 kg/m^3 and fineness modulus of aggregate is 2.72.A slump of 60mm is necessary The water absorption of coarse aggregate is 1% and free moisture in fine aggregate is 2% .Design the concrete mix using IS code method. Assume any missing data. (16M)

7. Write about the following (16M)
   i) Self compacting concrete. ii) Fibre reinforced concrete
   iii) Light weight concrete iv) Ready mix concrete
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Code No: RT22015 **R13** SET - 4

II B. Tech II Semester Regular/Supplementary Examinations, April/May - 2017
CONCRETE TECHNNOLOGY
(Civil Engineering)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answer **ALL** the question in **Part-A**
3. Answer any **THREE** Questions from **Part-B**

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PART –A

1. a) Write short note on grading and surface area of aggregate. (4M)
   b) What is shotcrete concrete? (3M)
   c) What are the factors affecting strength of concrete? (4M)
   d) Write about dynamic modulus of elasticity. (4M)
   e) Write about quality control of concrete. (3M)
   f) What are the different types of special concrete? Write about any one. (4M)

PART -B

2. a) What are the different types of plasticizers and superplasticizers? (6M)
   b) What is fineness modulus? How is sieve analysis conducted for FA and CA (10M)

3. a) What are the steps in the manufacture of concrete? (8M)
   b) What is the quality of water mixing in concrete? (8M)

4. a) What is the relation between compression and split tensile strength? (8M)
   b) What are the different Non Destructive Tests? Also, write the codal provisions of NDT. (8M)

5. a) Discuss the relation between modulus of elasticity and strength. (8M)
   b) Define shrinkage and types of shrinkage. (8M)

6. Design a concrete mix of M25 grade. Take standard deviation of 4MPa. The specific gravities of coarse aggregate and fine aggregate are 2.72 and 2.60 respectively. The bulk density of coarse aggregate is 1610 kg/m^3 and fineness modulus of aggregate is 2.74.A slump of 60mm is necessary The water absorption of coarse aggregate is 1% and free moisture in fine aggregate is 2% .Design the concrete mix using IS code method. Assume any missing data. (16M)

7. a) What are the different types of fibres? What are factors affecting properties of FRC. (10M)
   b) Write about High Performance Concrete (6M)
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Code No: RT22012 **R13** SET - 1

II B. Tech II Semester Regular/Supplementary Examinations, April/May-2017
HYDRAULICS AND HYDRAULIC MACHINERY
(Civil Engineering)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answer **ALL** the question in **Part-A**
3. Answer any **THREE** Questions from **Part-B**

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PART-A

1. a) Find the velocity of flow and rate of flow of water through a rectangular channel of 5 m wide and 2 m deep, when it is running full. The channel is having bed slope of 1 in 3000. Take Chezy's constant C = 50
   b) What do you mean by fundamental units?. Give examples.
   c) Define the term Impacts of jets
   d) Define the term Hydraulic machines
   e) Define the terms suction head and delivery head.
   f) Explain the Plant factor.

PART-B

2. a) Define the term most economical section of a channel. What are the conditions for the rectangular channel to be the best section?
   b) What is meant by an economical section of a channel?

3. a) What is meant by geometric, kinematic and dynamic similarities? Are these similarities truly attainable? If not why?
   b) Define the following non-dimensional numbers: Reynold's number, Froude's number and Mach's number. What are their significances for fluid flow problems?
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4. a) A jet of water of diameter 150 mm strikes a flat plate normally with a velocity of 12 m/s. The plate is moving with a velocity of 6 m/s in the direction of the jet and away from the jet. Find: (i) The force exerted by the jet on the plate, (ii) Work done by the jet on the plate per second, (iii) power of the jet, and (iv) efficiency of the jet.

   b) A jet of water having a velocity of 20 m/s strikes a curved vane which is moving with a velocity of 9 m/s. The vane is symmetrical and is so shaped that the jet is deflected through 120°. Find the angle of the jet at inlet of the vane so that there is no shock. What is the absolute velocity of the jet at outlet in magnitude and direction and the work done per second per unit weight of water striking? Assume the vane to be smooth.

5. The following data is related to the pelton wheel:

   Head at the base of the nozzle = 110m,
   Diameter of the jet = 7.5 cm,
   Discharge of the nozzle = 200 litres/s,
   Shaft power = 191.295 kW,
   Power observed in mechanical resistance = 3.675 kW.

   Determine: (i) Power lost in the nozzle and, (ii) Power lost due to hydraulic resistance in the runner.

6. a) What do you understand by characteristics curves of a pump? What is the significance of the characteristic curves?

   b) A single acting reciprocating pump running at 30 r.p.m., delivers0.012 m^3/sec of water. The diameter of the piston is 25 cm and stroke length is 50 cm. Determine: (i) The theoretical discharge of the pump, (ii) Co-efficient of discharge and (iii) Slip and percentage slip of the pump.

7. Explain the following: (i) Load factor (ii) Utilization factor (iii) Estimation of hydropower potential.

Code No: RT22012 **R13** SET - 2

II B. Tech II Semester Regular/Supplementary Examinations, April/May-2017
HYDRAULICS AND HYDRAULIC MACHINERY
(Civil Engineering)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answer **ALL** the question in **Part-A**
3. Answer any **THREE** Questions from **Part-B**

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PART-A

1. a) What do you understand by Flow in open channel?
   b) What do you mean by derived units? Give examples.
   c) Obtain an expression for the force exerted by a jet of water on a fixed vertical plate in the direction of the jet
   d) Differentiate between turbines and pumps.
   e) Define the terms static head and manometric head.
   f) What is a penstock.

PART-B

2. a) Prove that for the trapezoidal channel of most economical section:
   Half of top width = Length of one of the sloping sides.
   Hydraulic mean depth = ½ depth of flow.
   b) Explain how the hydraulic jump forms.

3. a) What is meant by geometric, kinematic and dynamic similarities? Are these similarities truly attainable?
   b) Define the following non-dimensional numbers: Reynold's number, Froude's number and Mach's number. What are their significances for fluid flow problems?
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4. a) A jet of water of diameter 150 mm strikes a flat plate normally with a velocity of 12 m/s. The plate is moving with a velocity of 6 m/s in the direction of the jet and away from the jet. Find: (i) The force exerted by the jet on the plate, (ii) Work done by the jet on the plate per second, (iii) power of the jet, and (iv) efficiency of the jet.

   b) A jet of water having a velocity of 20 m/s strikes a curved vane which is moving with a velocity of 9 m/s. The vane is symmetrical and is so shaped that the jet is deflected through 120°. Find the angle of the jet at inlet of the vane so that there is no shock. What is the absolute velocity of the jet at outlet in magnitude and direction and the work done per second per unit weight of water strikings? Assume the vane to be smooth.

5. The following data is related to the pelton wheel:

   i) Head at the base of the nozzle = 110m,
   ii) Diameter of the jet = 7.5 cm,
   iii) Discharge of the nozzle = 200 litres/s,
   iv) Shaft power = 191.295 kW,
   v) Power observed in mechanical resistance = 3.675 kW.

   Determine: (i) Power lost in the nozzle and, (ii) Power lost due to hydraulic resistance in the runner.

6. a) Define cavitation, what are the effects of cavitation? Give the necessary precautions against cavitation.

   b) A double acting reciprocating pump, running at 50 r.p.m. is discharging 900 litres of water per minute. The pump has stroke of 400 mm. The diameter of piston is 250 mm. The delivery and suction head are 25 m and 4 m respectively. Find the slip of the pump and power required to drive the pump.

7. Explain the following: (i) Load factor (ii) Utilization factor (iii) Estimation of hydropower potential.

Code No: RT22012 **R13** SET - 3

II B. Tech II Semester Regular/Supplementary Examinations, April/May-2017
HYDRAULICS AND HYDRAULIC MACHINERY
(Civil Engineering)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answer **ALL** the question in **Part-A**
3. Answer any **THREE** Questions from **Part-B**

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PART-A

1. a) What is rapidly varied flow.
   b) Explain the term dimensionally homogeneous equation.
   c) Define the term Jet propulsion
   d) What do you mean by gross head and efficiency of turbine?
   e) How does a centrifugal pump work?
   f) Explain surge tank.

PART-B

2. a) Derive the condition for the best side slope of the most economical trapezoidal channel.
   b) Find the side slope in a trapezoidal section of maximum efficiency which will carry the same flow as a half square section of the same area.

3. a) What are the different laws on which models are designed for dynamic similarity? Where are they used?
   b) Explain the terms: Distorted models and undistorted models. What is the use of distorted models?

4. A jet of water having a velocity of 30 m/s strikes a curved vane, which is moving with a velocity of 15 m/s. The jet makes an angle of 30° with the direction of motion of vane at inlet and leaves at an angle of 120° to the direction of motion of vane at outlet. Calculate: (i) Vane angles, If the water enters and leaves the vane without shock, (ii) Work done per second per unit weight of water striking the vanes per second.

5. An inward flow reaction turbine has an external diameter of 1 m and its breadth at inlet is 200 mm. If the velocity of flow at inlet is 1.5 m/s, find the mass of water passing through the turbine per second. Assume 15% of the area of flow is blocked by blade thickness. If the speed of the runner is 200 r.p.m. and guide blade makes an angle of 15° to the wheel tangent, draw the inlet velocity triangle and find: (i) The runner vane angle at inlet (ii) Velocity of wheel at inlet, (iii) The absolute velocity of water leaving the guide vanes and (iv) The relative velocity of water entering the runner blade.

6. a) How will you determine the possibility of the cavitation to occur in the installation of a turbine or a pump?
   b) A single acting reciprocating pump running at 30 r.p.m., delivers 0.012 m^3/sec of water. The diameter of the piston is 25 cm and stroke length is 50 cm. Determine: (i) The theoretical discharge of the pump, (ii) Co-efficient of discharge and (iii) Slip and percentage slip of the pump.

7. Explain the following: (i) Load factor (ii) Utilization factor (iii) Estimation of hydropower potential.

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Code No: RT22012 **R13** SET - 4

II B. Tech II Semester Regular/Supplementary Examinations, April/May-2017
HYDRAULICS AND HYDRAULIC MACHINERY
(Civil Engineering)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answer **ALL** the question in **Part-A**
3. Answer any **THREE** Questions from **Part-B**

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PART-A

1. a) Explain gradually varied flow.
   b) What do you mean by fundamental units and derived units?
   c) Obtain an expression for the force exerted by a jet of water on a fixed vertical plate in the direction of the jet
   d) How will you classify the turbines?
   e) Explain the working of a single – stage centrifugal pump with sketches.
   f) Explain Anchor block.

PART-B

2. a) Prove that for a channel of circular section, the depth of flow, d = 0.81 D for maximum velocity and = 0.95 D for maximum discharge where D = Diameter of circular channel, d = depth of flow.
   b) Explain Specific energy of a flowing liquid, minimum specific energy, critical depth, critical velocity and alternate depths as applied to non-uniform flow.

3. a) What are the different laws on which models are designed for dynamic similarity? Where are they used?
   b) Explain Distorted models and undistorted models. What is the use of distorted models?

4. A jet of water of diameter 50 mm, having a velocity of 30 m/s strikes a curved vane which is moving with a velocity of 15 m/s in the direction of the jet. The jet leaves the vane at an angle of 60° to the direction of motion of vanes at outlet. Determine: (i) The force exerted by the jet on the vane in the direction of motion, (ii) work done per second by the jet.

5. A Francis turbine with an overall efficiency of 70% is required to produce 147.15 kW. It is working under a head of 8 m. The peripheral velocity = $0.30\sqrt{2gH}$ and the radial velocity of flow at inlet is $0.96\sqrt{2gH}$. The wheel runs at 200 r.p.m. and the hydraulic losses in the turbine are 20% of the available energy. Assume radial discharge, determine: (i) The guide blade angle, (ii) The wheel vane angle at inlet, (iii) Diameter of the wheel at inlet and (iv) width of wheel at inlet.

6. a) Draw and discuss the operating characteristics of a centrifugal pump.
   b) A double acting reciprocating pump, running at 50 r.p.m. is discharging 900 litres of water per minute. The pump has stroke of 400 mm. The diameter of piston is 250 mm. The delivery and suction head are 25 m and 4 m respectively. Find the slip of the pump and power required to drive the pump.

7. Explain the following : i) Estimation of hydropower potential ii) Load factor iii) Utilization factor

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Code No: RT22014 **R13** SET - 1

II B. Tech II Semester Regular/Supplementary Examinations, April/May-2017
MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS
(Com. to CE, EIE)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answer **ALL** the question in **Part-A**
3. Answer any **THREE** Questions from **Part-B**

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PART –A

1.	a)	Mention the Concept of Demand	(4M)
	b)	Write a note on Cobb-Douglas Production	(4M)
	c)	Define Market Skimming	(3M)
	d)	What do you mean by Joint Stock Company	(4M)
	e)	Define Double Entry System	(3M)
	f)	What is Capital Budgeting	(4M)

PART –B

2.	a)	Discuss the scope of Managerial Economics in business decision making	(8M)
	b)	Explain the demand forecasting technique in modern organization.	(8M)
3.	a)	Define Production function. What is its importance?	(8M)
	b)	Break-even analysis is highly important in out-put decision making. Do you agree? Discuss	(8M)
4.	a)	What do you mean by market? Explain its important features.	(8M)
	b)	What is monopolistic competition? Explain its important features	(8M)
5.	a)	Discuss the factors affecting choice of the forms of business organization.	(8M)
	b)	What is the need of Public enterprises? Explain the recent achievement of Public enterprises.	(8M)
6.	a)	Define and explain the importance of the ratio analysis and explain types of ratios	(6M)
	b)	Record the following transactions in the journal of Rajagopal furniture mart: 2014 Jan1 Started business with cash 10,000/- Jan 2 Cash deposited into bank 9,000/- Jan 3 Paid installation charges of machinery 100/- Jan 4 Paid wages 3000/- Jan 5 Paid rent 200/- Jan 6 Paid salaries 4000/-	(10M)
7.	a)	Find out the IRR of the following investment proposal: Initial investment Rs.70,000/-, Expected annual cash inflow RS.24,000/- Economic life of the project 4 years, Present value of annuity of Re 1 for 4 years @ 10% 3.170 @ 12% 3.037 @14% 2.914 @ 16% 2.798	(10M)
	b)	Define Capital Budgeting. Explain its importance	(6M)
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Code No: RT22014 **R13** SET - 2

II B. Tech II Semester Regular/Supplementary Examinations, April/May-2017
MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS
(Com. to CE, EIE)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
2. Answer **ALL** the question in **Part-A**
3. Answer any **THREE** Questions from **Part-B**

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PART –A

1. a) Define Elasticity of Demand (3M)
   b) Write a note on Cost Volume Profit analysis (4M)
   c) Define Isoquants and Isocosts (3M)
   d) What do you mean by Sole trader (4M)
   e) List out the levels of Business cycle (4M)
   f) What are the different financial statements (4M)

PART –B

2. a) Define Managerial Economics and its relation with other subjects. (8M)
   b) Explain different types of Elasticity of Demand (8M)

3. a) Describe Break-even point with the help of diagram and its uses in business decision making. (8M)
   b) What are the factors of Production? How do they influence the production function in an enterprise? (8M)

4. a) What is a Perfect Competition market? Describe its features. (8M)
   b) Explain the objectives of Pricing. And its methods. (8M)

5. a) What do you mean by Double entry system of Book-keeping? Explain elaborately (7M)
   b) Mention different types of classification of accounts along with examples. (9M)

6. a) Differentiate between Sole trader and Partnership elaborately (7M)
   b) A firm sold goods worth Rs.5, 00,000 and its gross profit is 20 percent of sales value. The inventory at the beginning of the year was Rs.16, 000 and at the end of the year was Rs.14, 000. Compute inventory turnover ratio and also the inventory holding period. (9M)

7. a) Project A requires an investment of Rs.5, 00,000 and has a scrap value of Rs.20, 000 after 5 years. It is expected to yield profits after depreciation and taxes during the five years amounting to Rs.40, 000, Rs.60, 000, Rs.70, 000, Rs.50, 000, Rs.20, 000. Calculate the average rate of return. (9M)
   b) Enumerate various types of capital and explain its techniques. (7M)
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Code No: RT22014 **R13** SET - 3

II B. Tech II Semester Regular/Supplementary Examinations, April/May-2017
MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS
(Com. to CE, EIE)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answer **ALL** the question in **Part-A**
3. Answer any **THREE** Questions from **Part-B**

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PART –A

1. a) Mention the theory of demand (4M)
   b) Differentiate between fixed cost Vs variable cost (4M)
   c) Write a note on Internet pricing (4M)
   d) Write a note on Partnership deed (4M)
   e) Define cash flow statement (3M)
   f) What do you mean by NPV (3M)

PART –B

2. a) Describe the managerial economics and its significance (8M)
   b) Explain various methods of demand forecasting elaborately (8M)

3. a) Describe the law of variable proportions along with examples (9M)
   b) Explain different cost concepts in the globalised era (7M)

4. a) Discuss the merits and demerits of a Partnership firm (9M)
   b) What is the need of Public enterprises and its features (7M)

5. a) Describe the accounting concepts and conventions elaborately (7M)
   b) Journalise the following transactions in the books of Sri Suresh & Co. (9M)
   Jan 1 started business with capital 50,000/-
   Jan 2 cash deposited into bank 10,000/-
   Jan 5 purchased goods for cash from Rama 10,000/-
   Jan 8 purchased machinery from Ajay Engineering company and payment made by cheque 15,000/-,
   Jan 10 paid wages 10,000/-
   Jan 12 received interest from Ashok 20,000/-

6. a) Describe the managerial theory of firm proposed by Maris and Williamson's models. (8M)
   b) Explain the characteristics of Monopolistic pricing method. (8M)

7. a) The cost of a project is Rs.50,000 the annual cash inflows for the next 4 years are Rs.25,000. What is the payback period for the project (6M)
   b) A project costs Rs.25,000 and is expected to generate cash inflows as (10M)

Year	Cash inflows
1	10,000
2	8,000
3	9,000
4	6,000
5	7,000

The cost of capital is 12%. Compute the NPV of the Project.

Note: Log table is required for this paper.

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Code No: RT22014 **R13** SET - 4

II B. Tech II Semester Regular/Supplementary Examinations, April/May-2017
MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS
(Com. to CE, EIE)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answer **ALL** the question in **Part-A**
3. Answer any **THREE** Questions from **Part-B**

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PART –A

1.	a)	Write a note on exceptions of law of demand	(4M)
	b)	Write a note on Cooperative societies	(4M)
	c)	Define Trial balance	(3M)
	d)	What do you mean Isoquants	(3M)
	e)	Write a note on statement of changes of working capital	(4M)
	f)	Define Profitability index	(4M)

PART -B

2.	a)	Discuss the measurements of elasticity of demand elaborately	(8M)
	b)	Explain the various determinants of Demand	(8M)
3.	a)	Describe the economies of scale and its advantages	(8M)
	b)	A firm has a fixed cost of Rs.10,000, selling price per unit is Rs.5 and variable cost per unit is Rs.3. i) Determine break-even point in terms of volume and also sales value ii) Calculate the margin of safety considering that the actual production is 8000 units.	(8M)
4.	a)	Enumerate the features of monopoly type of market structures	(8M)
	b)	Differentiate between duopoly and oligopoly market structures	(8M)
5.	a)	Describe the merits and demerits of sole trader form of business	(8M)
	b)	What is partnership? Explain contain of partnership Act.	(8M)
6.	a)	Differentiate between funds flow statement and cash flow statement	(8M)
	b)	Stock turnover ratio is 2.5 times. Average stock is Rs.20,000. Calculate cost of goods sold and also sales if profit earned is 25% of cost.	(8M)
7.	a)	Explain the merits and limitations of payback period	(8M)
	b)	Discuss the acceptance and rejection rules of discounted and non-discounted cash flow techniques of capital budgeting.	(8M)
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Code No: RT22013 **R13** SET - 1

II B. Tech II Semester Regular/ Supplementary Examinations, April/May-2017
STRENGTH OF MATERIALS - II
(Civil Engineering)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answer **ALL** the question in **Part-A**
3. Answer any **THREE** Questions from **Part-B**

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PART –A

1. a) Discuss in brief various prominent theories of failure.
   b) Compare the weights of equal lengths of hollow and solid shafts to transmit a given torque for the same maximum shear stress if the inside diameter is 2/3 of the outside.
   c) Why is it necessary to use the minimum radius of gyration of section to calculate the crippling load? Explain briefly.
   d) Explain the conditions for stability of dam.
   e) Discuss briefly the stresses in beams subjected to unsymmetrical bending.
   f) What are the different methods of analyzing for finding out the forces of a perfect frame? Which one is used where and why?

PART -B

2. a) Derive expressions for principal stresses and maximum shear stress when a body is subjected to a simple stresses in two mutually perpendicular directions.
   b) At a point in a material, the stresses on two mutually perpendicular planes are $50N/mm^2$ (tensile) and $30\ N/mm^2$ (tensile). The shear stress across these planes is $12N/mm^2$. Using Mohr circle, find magnitude and direction of the resultant stress on a plane making an angle of 35^0 with the plane of the first stress. Find also, the normal and tangential stresses on this plane.

3. a) A 50 kW has to be transmitted at 150 R.P.M. Find the necessary diameter of solid circular shaft. Find necessary hollow shaft with internal diameter equal to 3/4 of external diameter. What will be the % savings in the weight of the shaft? Allowable shear stress is $90\ N/mm^2$ and density of the material is $7g/cm^3$.
   b) Calculate the angle of twist for a shaft having diameter of 60 mm at one end and 70mm at the other end in a length of 2 m. Also, find the % error committed in calculating, if it is calculated on the basis if an average diameter of 65 mm.

4. A cast iron hollow column of 200 mm external diameter and 160 mm internal diameter is 4 m long. It is fixed at its both ends and subjected to an eccentric load of 150 kN. Determine the maximum eccentricity, in order that there is no tension any where in the section. Take $E = 0.94 \times 10^5\ N/mm^2$.

5. Masonry dam 9m high, 1.5m wide at top and 6m wide at the base retains water to a depth of7.5m, the water face of the dam being vertical. Find maximum and minimum stress intensities at the base. The weight of water is $9.81kN/m^3$ and weight of masonry is $24kN/m^3$
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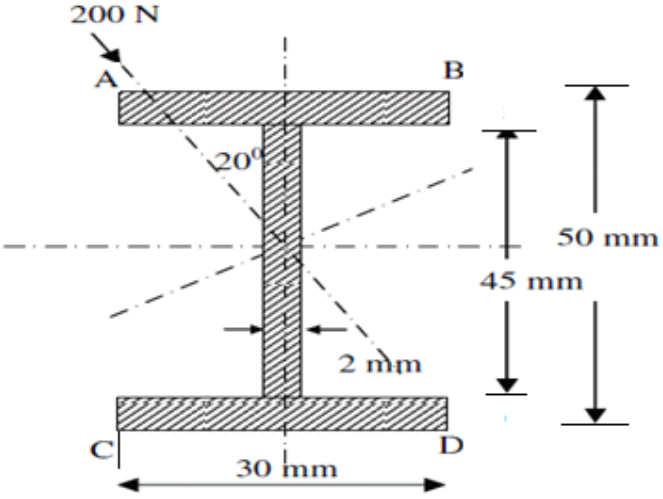
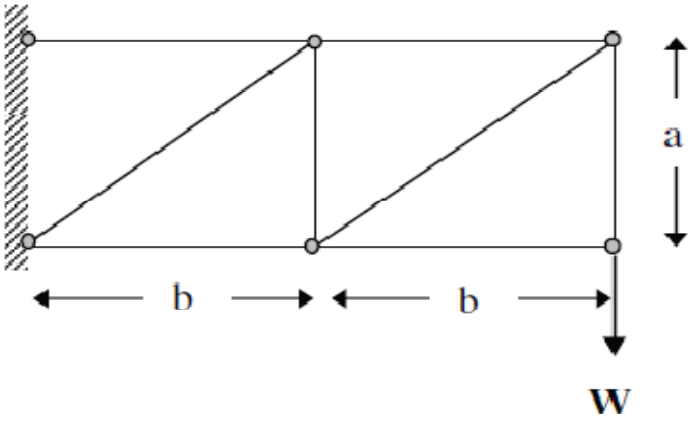
6. A cantilever, of I – section, 2.4 meters long is subjected to a load of 200 N at the free end as shown in figure. Determine the resulting bending stresses at corners A and B, on the fixed section of the cantilever.



7. Determine the forces in the members of pin jointed steel structure shown in figure by the method of section.



Code No: RT22013 **R13** SET - 2

II B. Tech II Semester Regular/ Supplementary Examinations, April/May-2017
STRENGTH OF MATERIALS - II
(Civil Engineering)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answer **ALL** the question in **Part-A**
3. Answer any **THREE** Questions from **Part-B**

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PART –A

1. a) Write a note on significance of theories of failure.
   b) Derive the fundamental torsion equation.
   c) Compare the ratio of the strength of a solid steel column to that of a hollow of the same cross-sectional area. The internal diameter of the hollow column is ¾ of the external diameter. Both the columns have the same length and are pinned at the ends.
   d) Explain the conditions for stability for retaining wall.
   e) Discuss briefly about deflection of beams under unsymmetrical bending.
   f) What is the advantage of method of section over method of joints?

PART -B

2. a) Maximum shear stress theory and Maximum strain energy theories of failure that govern the design of a stressed system.
   b) A piece of material is subjected to tensile stresses of P1 and P2 at right angles to each other (p1>p2). Find the plane across which the resultant stress is most inclined to the normal. Find the value of this inclination and the resultant stress when p1 = 60 N/mm^{2}and p2 = 40 N/mm^2 (both tensile).

3. An open coiled helical spring is made of 12mm diameter wire has 16 coils and 75mm mean diameter with each coil makes an angle of 15^0 with the plane perpendicular to the axis of the spring. Calculate for an axial load of 300N i) Axial deflection, ii) Twist about horizontal axis of the free end and iii) Maximum intensities of direct and shear stresses induced in the section of the wire.
   E = 2.0×10^5 N/mm^2, G = 0.82×10^5 N/mm^2

4. A 350 mm × 165 mm R. S. joist is used as a strut, 6 metres long, one end fixed, the other hinged. Calculate the crippling load by Rankines formula. Compare this with the load obtained by the Euler formula, taking E = 2×105N/mm^2. For what length of this strut will the two formulae give the same crippling load? For the joist, area of section = 630mm^{2}Ixx = 13158.3 ×10^4mm^4; Iyy = 631.9×10^4mm^4.
   Take fc = 315N/mm^2

5. A Retaining wall 3m wide at top and 8m wide at bottom and 12m high is subjected to earth pressure on the back. If the weight of masonry is 25kN/m^3, and weight of earth retained is16kN/m^2 and angle of repose is 30^0 is horizontal and level with the top of the wall, Find maximum and minimum stress intensities at the base. Examine the stability of the wall if μ=0.62.
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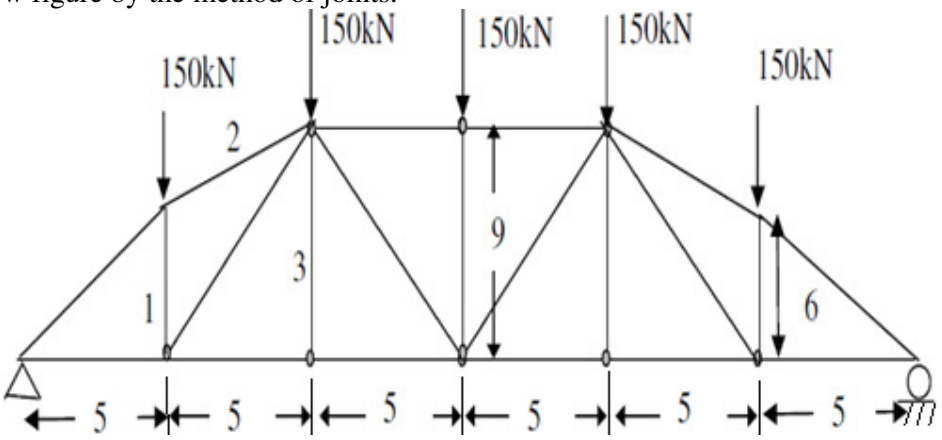
6. A 240 mm × 120 mm steel beam of I-section is simply supported over a span of 6m and carries two equal concentrated loads at points 2 m from each end. The properties of the section are Ixx = $6012.32 \times 10^4 mm^4$, Iyy = 452.48×10^4 mm^4.
a) Determine the magnitude of the loads when the plane of the loads is vertical through YY. The permissible stress is 150 N/mm^2 in compression and tension.
b) Determine the degree of inclination of the plane of these loads to the vertical principal plane YY that will result in 20 percent greater bending stress than permitted under (A).

7. Determine the forces in the members' 1, 2, 3 of a pin jointed steel structure in below figure by the method of joints.



Code No: RT22013 **R13** SET - 3

II B. Tech II Semester Regular/ Supplementary Examinations, April/May-2017
STRENGTH OF MATERIALS - II
(Civil Engineering)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answer **ALL** the question in **Part-A**
3. Answer any **THREE** Questions from **Part-B**

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PART –A

1. a) Explain briefly the maximum shear strain energy theory
   b) Derive expression for deflection in an open coiled helical spring subjected to axial load?
   c) Enumerate the assumptions of Euler's theorem for long columns.
   d) Explain briefly determination of stresses in the case of chimneys.
   e) Explain graphical method for locating principal axes.
   f) How will you use method of section in finding forces in the members of a truss? Explain briefly.

PART -B

2. A bending moment of M applied to a solid round shaft causes a maximum direct stress f at elastic failure. Determine the numerical relation between Bending moment M and twisting moment T which acting alone on the shaft, will produce elastic failure according to each of the following theories of failure i) Maximum Principal stress, ii) Maximum Principal Strain Theory, iii) Maximum Shear Stress Theory iv) Maximum strain energy theories. Poisson's ratio =0.3

3. A closely coiled helical spring is made out of 10mm dia. steel rod, the coil having12 complete turns. The mean dia. of spring is 10mm. Calculate the shear stress induced in the section of the rod due to an axial load of 250N. Find also the deflection under the load, energy stored in the spring and the stiffness of spring. Take $N = 8 \times 10^4$ N/mm^2.

4. A column of circular cross section made of cast iron 300mm in diameter and 25mm thick is used as a column 5m long. Both the ends of the column are fixed. The column carries a load of 300kN at an eccentricity of 25mm from the axis of the column. Find the extreme stress on the column section. Determine the maximum eccentricity in order there may be no tension anywhere on the section.

5. A cylindrical chimney shaft of a hollow circular section, 2.50 meters external diameter, 1 meter internal diameter, is 30 meters high. If the horizontal intensity of wind pressure varies as X2/3 where X is the vertical height above the ground, calculate the over turning moment at the base due to the force of wind pressure, taking the coefficient of wind-resistance as 0.6. Given that the horizontal intensity of wind pressure at a height of 20 meters is 1KN/m^2. If the weight of masonry is 22.5KN/m^3, calculate the extreme intensities of stress at the base
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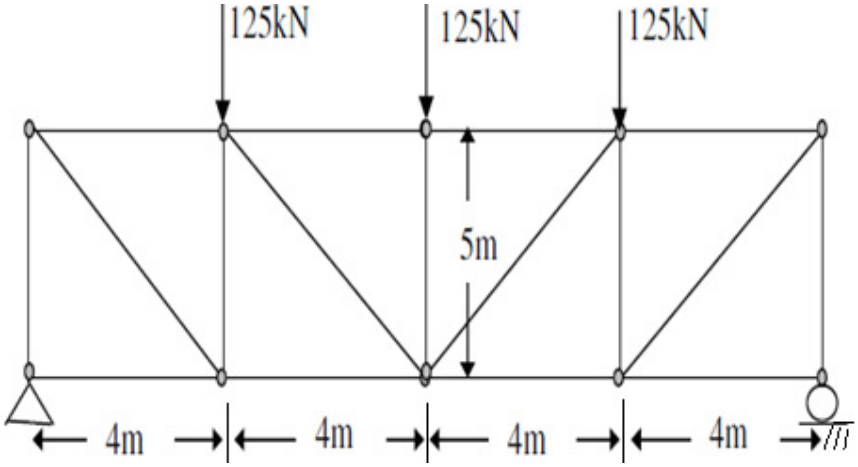
6. A beam having an I section 5m in length carrying a uniformly distributed load of 15 kN/m and having the section properties listed below. Calculate maximum bending stresses induced in the member when the trace of load plane is inclined at 18^0 to the principal axis YY. Calculate the maximum deflection in the beam.
I_{XX} = 13158 cm^4 , I_{YY} = 631.9 cm^4 , Z_{XX} = 751.9 cm^3 Z_{YY} =76.6 cm^3, h = 350mm, b = 165mm

7. Determine the forces in the members of a pin jointed steel structure in figure by method of sections.



Code No: RT22013 **R13** SET - 4

II B. Tech II Semester Regular/ Supplementary Examinations, April/May-2017
STRENGTH OF MATERIALS - II
(Civil Engineering)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answer **ALL** the question in **Part-A**
3. Answer any **THREE** Questions from **Part-B**

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PART –A

1. a) Discuss briefly about maximum shear stress theory.
   b) Derive general equation governing the torsion in a circular shaft.
   c) What is meant by Euler's critical stress and write limitations of Euler's theory.
   d) Where do you use beams curved in plan?
   e) Explain phenomenon of "Unsymmetrical bending" in structural elements.
   f) Explain briefly tension coefficient method.

PART –B

2. At a point is an elastic material there are normal stresses of 35MPa (tensile) and 25MPa (compressive) on two mutually perpendicular planes, accompanied by shearing stresses of 10MPa on the same planes. The loading on the material is increased so that the stresses reach values of K times those given. If the max. direct stress is not to exceed 80MPa and the max shear stress is not to exceed 50 MPa, find them ax value of K.

3. a) Find the percentage saving in material if a hollow shaft of the same material is to replace a solid shaft transmitting the same torque the internal dia = 3/4 of externaldia.
   b) A propeller shaft 200 mm dia. transmits 3000 H.P. at 240 R.P.M. The propeller weighing 50 kN is carried by the shaft overhanging the support by 40 cm. The propeller thrust is 150 kN. Calculate the max. direct and shear stress induced in the cross-section of the shaft. Find also the planes on which they act.

4. A hollow C.I. column with fixed ends supports an axial load of 1000 kN. If the column is 5m long and has an external diameter of 250mm, find the thickness of metal required. Use the Rankine's formula, taking a constant 1/6400 and assume a working stresses of 80N/mm^2.

5. A Masonry dam 8m high, 1.5m wide at top and 5m wide at the base retains water to a depth of7.2m, the water face of the dam being vertical. Find maximum and minimum stress intensities at the base. The weight of water is 9.81kN/m^3 and weight of masonry is 22kN/m^3.
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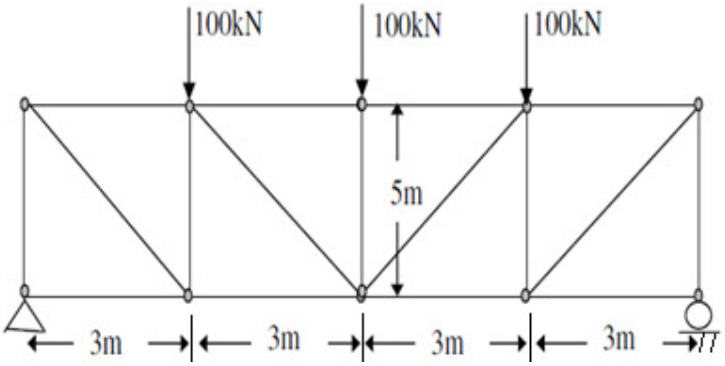
6. A 500 x 500 mm timber is strengthened by the addition of 500mm x 8mm steel plates secured to its top and bottom surfaces. The composite beam is simply supported at it sends and carries a uniformly distributed load of 100kN/m run over an effective span of 6m. Find the maximum bending stresses in steel and timber at the mid span. Take ES =2x 10^5 N/mm^2 and E_T = 0.1 x 10^5 N/mm^2.

7. Determine the forces in the members of a pin jointed steel structure in figure by method of sections.



Code No: RT22016 **R13** SET - 1

II B. Tech II Semester Regular/Supplementary Examinations, April/May-2017
STRUCTURAL ANALYSIS-I
(Civil Engineering)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answer **ALL** the question in **Part-A**
3. Answer any **THREE** Questions from **Part-B**

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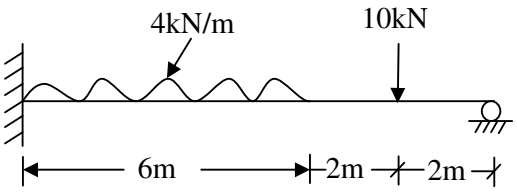
PART – A

1. a) A propped cantilever of length 'L' carries a concentrated load 'W' at its mid-span. Find the reaction at the prop.
   b) Find the moment at the left hand support, if a fixed beam of span 'L' is sunk by an amount 'Δ' at the right hand support.
   c) Define a continuous beam.
   d) Write the expression M_{AB} in terms of fixed moments, slopes θ_A, θ_B and settlement Δ.
   e) Derive the expression for strain energy of a straight prismatic bar of length L and cross-sectional area A, if it is subjected to a bending M.
   f) Construct influence line for bending moment at a section x of a simple beam of span L.

(4M+2M+4M+4M+4M+4M)

PART – B

2. A propped cantilever beam is shown in figure. Calculate the prop Reaction and also draw the BM & SF diagrams. (16M)



3. A fixed beam of span 6 m is subjected a UDL of 5 kN/m on the left half of the span and a point load of 15 kN at the middle of the right half of the span. Draw the S.F. and B.M. diagrams. (16M)
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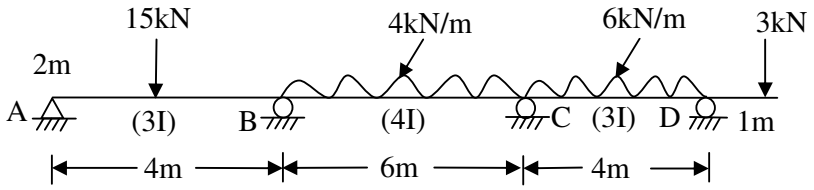
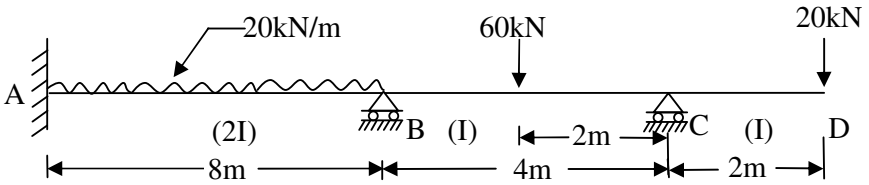
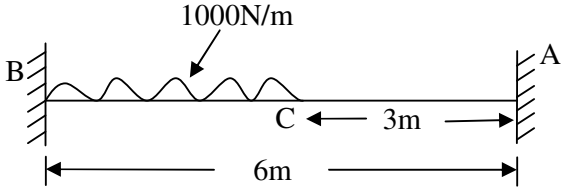
4. Analyze the continuous beam shown in figure, using three-moment equation. Draw S.F and B.M diagrams. (16M)



5. Analyse the beam ABCD shown in figure by Slope-Deflection method and draw bending moment diagram. (16M)



6. Determine the Reaction at A and the moment at B use strain Energy method. (16M)



7. Draw the Influence line diagram for reactions of a simply supported beam of 12 m span. Also draw the influence line diagrams for Shear force and bending moments at quarter span and mid-span sections (16M)

Code No: RT22016 **R13** SET - 2

II B. Tech II Semester Regular/Supplementary Examinations, April/May-2017
STRUCTURAL ANALYSIS-I
(Civil Engineering)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answer **ALL** the question in **Part-A**
3. Answer any **THREE** Questions from **Part-B**

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PART – A

1. a) A propped cantilever beam of span 6m due to a point load of 6kN at the mid span. Find the prop reaction.
   b) A fixed beam of span 6 m is subjected a UDL of 5 kN/m over the entire span. Find the net moment at the center of span.
   c) Define a continuous beam.
   d) Write the expression M_{BA} in terms of fixed moments, slopes θ_A, θ_B and settlement Δ.
   e) State the theorem of minimum potential energy.
   f) Determine the maximum positive shear force at a section 1.5 m in a simple beam of span 4m, when a point load of 15 kN rolls across the beam. (4M+4M+2M+4M+4M+4M)

PART – B

2. A cantilever of length 6m carries a u.d.l of 2 KN/m over a length of 4m starting from the fixed end. The cantilever is propped rigidly at the free end. If the value of $E=2x10^5$ N/mm^2 and $I=10^8$ mm^4 then determine: a) Reaction at the rigid drop, b) The deflection at the centre of the cantilever and c) Magnitude and position of maximum deflection (16M)

3. A fixed beam of span 8 m is subjected to a linearly varying load of 8 kN/m from one support to 6kN/m to the other support. Find the support reactions and moments. Draw the shear force and bending moment diagrams. (16M)

4. Two point loads of 8 kN and 4 kN spaced 3 m apart cross a girder of 15 m span, the smaller load leading from left to right. Construct the maximum S.F. and B.M. diagrams, stating the positive and amount of absolute maximum bending moment. (16M)
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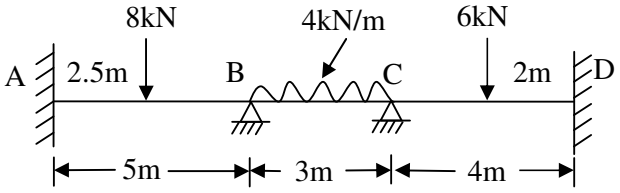
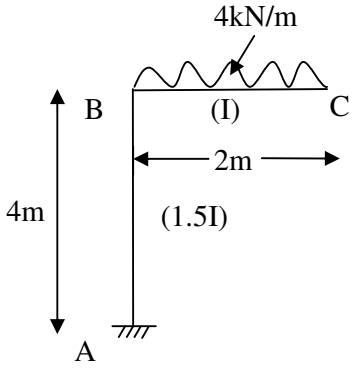
5. A continuous beam ABC consists of two spans AB of length 4m, and BC of length 3m. The span AB carries a point load of 100 KN at its middle points. The span BC carries a point load of 120 KN at 1m from C. The end A is fixed and the end C is simply supported. Find
   The moments at the supports
   The reactions at the supports and
   Draw the B.M diagram
   Use Clapeyron's theorem of three moments. (16M)

6. A continuous beam ABCD 12 m long is fixed at A and D, and is loaded as shown in figure. Analyze the beam completely if the following moments take place simultaneously (i) the end A yields, turning through 1/250 radians in a clock-wise direction (ii) end B sinks 30 mm in downward direction, (iii) end C sinks 20 mm in downward direction. The beam has constant I=33.20x10^5 mm^4 and E=2x105 N/mm^2. Use slope-deflection method. (16M)



7. Determine the horizontal and vertical component of deflection at the Point 'C' of the frame shown in figure. Take E=200x10^3 N/mm^2 and I =6x10^7 mm^4. Use Strain Energy method.
   (16M)



Code No: RT22016 **R13** SET - 3

II B. Tech II Semester Regular/Supplementary Examinations, April/May-2017
STRUCTURAL ANALYSIS-I
(Civil Engineering)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answer **ALL** the question in **Part-A**
3. Answer any **THREE** Questions from **Part-B**

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PART – A

1. a) A propped cantilever beam of span 5 m is loaded with a UDL of 15 kN/m on the entire span. Find the prop reaction.
   b) A fixed beam of span 6 m is subjected to a point load of 5 kN at the one-third of span from the left end. Find the moments at the supports.
   c) Write Clapeyron's theorem of three moment's equation with usual notations.
   d) Write the expression M_{AB} in terms of fixed moments and slopes θ_A, θ_B.
   e) Derive the expression for strain energy of a straight prismatic bar of length L and cross-sectional area A, if it is subjected to an axial force, F.
   f) Determine the bending moment at a section 1.5 m in a simple beam of span 4 m, when a point load of 15 kN rolls across the beam. (4M+4M+4M+3M+3M+4M)

PART – B

2. Find the maximum bending moment and locate the point of inflection for a propped cantilever beam of span 5 m due to a uniformly varying load, whose intensity is 5 kN/m at the fixed support and 2 kN/m at the simple support. (16M)

3. A fixed beam of 6 m span carries a uniformly distributed load of 12 kN/m run over the whole span. The level of right hand support sinks by 8 mm below that the left hand end. Take $E=2.10x10^8 kN/m^2$ and $I=4.50x10^{-5}$ m^4. Find (i) Support moments, (ii) Support reactions, and (iii) Deflection at the centre. (16M)

4. Two wheel loads of 16 and 8 kN at a fixed distance of 2 m, cross a beam of 10 m span. Draw the Influence Line for B.M and S.F for a point 4 m from left support, and find the max. B.M and S.F at that point. (16M)
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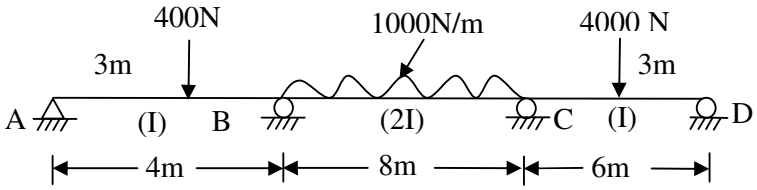
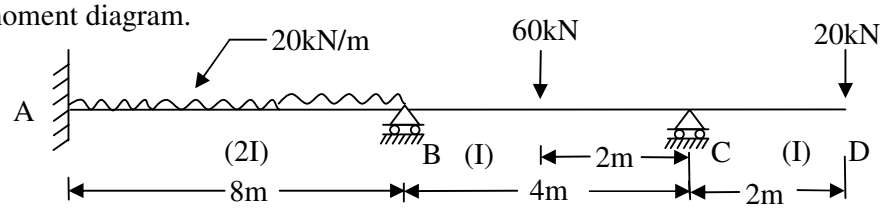
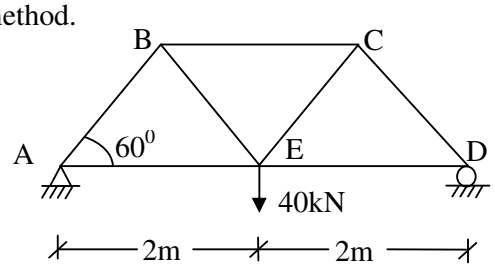
5. A continuous beam ABCD 18 m long is loaded as shown in figure. During loading support B sinks by 10 mm. Find support moments and plot shear force and bending moment diagrams for the beam. Take E = 20 kN/mm^2 , I = 8x10^6 mm^4. (16M)



6. Analyse the beam ABCD shown in figure by Slope-Deflection method and draw bending moment diagram. (16M)



7. Determine the vertical deflection of Joint 'E' for the truss shown in figure.
Take A=500x10^{-6} m^2, E=200x10^6 kN/m^2 are constant for all members.
Use Strain Energy method. (16M)



Code No: RT22016 **R13** SET - 4

II B. Tech II Semester Regular/Supplementary Examinations, April/May-2017
STRUCTURAL ANALYSIS-I
(Civil Engineering)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answer **ALL** the question in **Part-A**
3. Answer any **THREE** Questions from **Part-B**

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PART – A

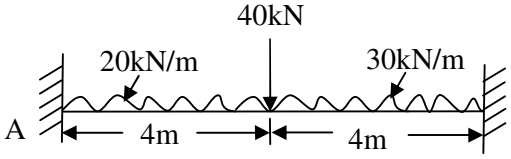
1. a) A propped cantilever beam of span 5 m is loaded with a UDL of 15 kN/m on the entire span. Find the prop reaction and moment at the fixed end.
   b) A fixed beam of span 6 m is subjected a UDL of 5 kN/m over the entire span. Find the moments at the supports.
   c) Write Clapeyron's theorem of three moment's equation with usual notations.
   d) Write the expression M_{BA} in terms of fixed moments and slopes θ_A,θ_B .
   e) Derive the expression for strain energy of a straight prismatic bar of length L and cross-sectional area A, if it is subjected a shear V.
   f) Construct influence line for a shear at a section x of a simple beam of span L.

(4M+4M+4M+3M+4M+3M)

PART – B

2. A Propped cantilever AB of span L fixed at A and simply supported at B carries a concentrated load 'P' at one third point from the fixed support. Find the reactions at the supports. Also find also the maximum deflection of the beam. EI is constant. (16M)

3. A fixed beam is shown in figure, analyze the beam and draw the SF and BM diagram (16M)



4. Four point loads 100, 120, 150 and 80 KN spaced equally 2 m apart crosses a girder of 25 m span from left to right with 100 KN load leading. Calculate the maximum BM at a section 5 m from the left hand support and absolute max BM. (16M)

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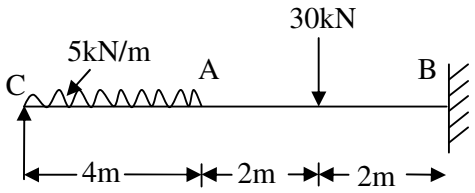
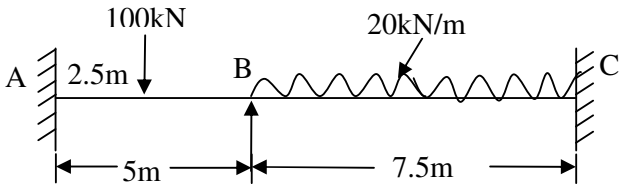
5. Draw the Shear force and bending moment diagram for the beam shown in figure. Use Clapeyron's theorem of three moments. EI=1x10^5 N/mm^2. (16M)



6. Anlayse the two-span continuous beam loaded a s shown in figure, by slope-deflection method, if the moment of inertia is span AB is I and that of span BC is 3I. Sketch the B.M and SFD (16M)



7. Determine the vertical deflection of Joint 'E' for the truss shown in figure. Take A=300x10^{-6} m^2, E=200x10^{6}kN/m^2 are constant for ball members. Use Strain Energy method. (16M)