

**MIDWESTERN UNIVERSITY
FACULTY OF ENGINEERING**

Examination Control Division

2074 Kartik

Exam	Retake		
	Level	BE	Full Marks
Program	Civil	Pass Marks	25
Year/Part	III/I	Time	3 Hrs.

Subject: Engineering Economics (MS301)

- Candidates are required to answer the questions in their own words as far as possible.
- Assume suitable values, with stipulation, if necessary.
- Figures in margin indicate full marks.

- 1 (a) "Knowledge of Engineering Economics helps in decision making process". Justify it by the principles of engineering economics. [2]
- (b) From the standard cost card, it is observed that 1 unit of production A requires fixed overhead for 2 labour hours at standard rate of Rs 15/hr. During a particular month, 800 units of product A were produced consuming 1800 hours, with actual fixed overhead rate of Rs 16.4/hr. The budgeted fixed overhead variance is Rs 30,000. Calculate fixed overhead variance indicating favourable and adverse. [3]
- 2 (a) Evaluate FW at the end of 15 years with 10% interest rate compounded monthly of a cash flow of Rs. 50,000 at the beginning of each year for first 10 years. [3]
- (b) Write the importance of time value of money. What is nominal and effective interest rate? [3]
- 3 (a) Your college is considering to purchase a vehicle of Rs. 3,00,000 expecting salvage value Rs. 50,000 at the end of 10th year. The use of vehicles saves Rs. 80,000 per year. When it needs Rs. 20,000 operating cost for each year. Find both types of payback period. [3]
- (b) Distinguish between financial and economic analysis. [2]
- Select the best project using ERR method when MARR = 18% and interest rate is 12%. [3]

Year	0	1	2	3	4
Project A	-40,000	-38,000	35,000	35,000	35,000
Project B	-60,000	25,000	40,000	-50,000	50,000

- 4 (a) Compare the following two mutually exclusive projects by using: [5]
- i) Co-terminated assumption
 - ii) Repeatability assumption

	Project A	Project B
Initial cost (Rs)	1,50,000	2,00,000
Salvage Value (Rs)	80,000	1,20,000
Annual revenue (Rs)	90,000	1,00,000
Operating cost (Rs)	20,000	20,000
Life (Years)	4	6
MARR	8%	8%

- (b) Government of Nepal has started four projects A,B, C & D for extension of information technology in the Country. The estimated cash flow over 10 years as shown in the table below. The capital investment capacity is limited to Rs. 80,000 and MARR is 10% per year. [4]

Project	A	B	C
Initial Investment (Rs)	32,000	25,000	72,000
Annual Revenue(Rs)	7,000	5,000	12,000
Salvage Value (Rs)	4,000	3,000	5,000
A	Contingent on the acceptance of B		
B & C	Mutually Exclusive		
D	Contingent on acceptance of C		

Recommend which investment alternative should be best? Use FW formulation.

- 5 (a) Find the both type of B/C ratio using PW formulation and AW formulation [3]
) Initial Investment = Rs 4,00,000
 Annual Benefit = Rs 1,50,000
 Annual Cost = Rs. 30,000
 Salvage value = Rs. 50,000
 Useful Life = 8 years
 MARR = 12% per years
- (b) Perform sensitivity analysis of the following project over a range of $\pm 30\%$ in a) [4]
) initial investment b) annual net revenue c) salvage value d) useful life
 Initial investment (I) = Rs 5,00,000
 Net annual revenue = Rs 1,20,000
 Salvage Value = Rs. 80,000
 Useful Life = 6 years
 MARR = 10 %
- 6 (a) A company is mechanizing its packing plants by investing Rs 3, 60,000. Estimate for [4]
) efficiency of design goals, their probability and corresponding annual expenses saving are as follows:

Design Goal met (%)	Probability	Annual Expenses Saving(Rs)
85	0.35	40,000
60	0.50	33,000
50	0.15	26,000

The company has another option to invest this money that earns 12% per year elsewhere. Based on Expected PW as decision criterion, determine whether the mechanizing is preferable or not? MARR = 9% and analysis period is 15 years.

- (b) We have just purchased a minicomputer at a cost of Rs. 10,500 with an estimated [5]
) salvage value of Rs 500 and a projected useful life of 6 years. If interest is 10 % per year determine:
 i) Sum of The year digit (SOYD) depreciation
 ii) Sinking fund depreciation

[4]

Define inflation. What are its causes? Suppose you borrowed Rs. 1,00,000 from a bank to buy a bike and you have promised to pay Rs. 5500 per month for two years.

What is the inflation free interest rate you are supposed to pay if average inflation rate is 0.75% per month?

- 7 (a) Write short notes on Personal and Corporate tax.

[2]

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Program	Civil	Pass Marks	25
Year/Part	III/I	Time	3 Hrs.

Subject: Engineering Economics (MS 301)

- Candidates are required to answer the questions in their own words as far as possible.
- Assume suitable values, with stipulation, if necessary.
- Figures in margin indicate full marks.

- 1 (a) Define engineering economics. What are the important uses of engineering economics? 3
- (b) From the standard cost card, it is observed that 1 unit of product A requires fixed overhead for 2 labour hours at standard rate of Rs. 15/hr. During a particular month ,800 units of product A were produced consuming 1800 hours with actual fixed overhead rate of Rs 16.4/hr. The budgeted fixed overhead is Rs 30,000. Calculate fixed overhead variance indicating favourable and adverse. 3
- 2 (a) Find effective interest rate when the nominal rate of interest is 12% per year and compounding is Monthly ii) Daily iii) Hourly iv) Continuously 3
- (b) How much rupees Mr. Gopal should deposit now so that he can withdraw Rs 2,00,000 every five years if the Bank interest rate is 9% per Year. 3
- 3 (a) If the maximum desired life period is 4 years.Determine projects acceptability from both type of payback

Period when MARR = 10% per year

EOY	0	1	2	3	4	5
Net cash Flow	-5,000	800	1,500	2,500	1,510	1,464

- (b) Use IRR method to evaluate following project when MARR is 15%

Initial Investment	Annual Income	Useful Life	Salvage Value
1,100	500	4	250

- 4 (a) Calculate PW of the following two mutually exclusive projects by using repeatability assumption when MARR is 10% per year

Alternatives	A	B
Initial Cost Rs	4,00,000	6,00,000
Annual Revenue Rs	30,000	35,000
Annual O & M cost Rs	3,000	4,000
Useful life year	4	8
Salvage Value	4,000	7,000

4

Some of the project are mutually exclusive as noted below. Using PW method & MARR = 10%,determine What combination of project is best if the capital to be invested is a) unlimited b) limited up to 48,000.

(b)

Project	0	1	2	3	4
B ₁	-50	20	20	20	20
B ₂	-30	12	12	12	12
C ₁	-14	4	4	4	4
C ₂	-15	5	5	5	5
D	-10	6	6	6	6

The condition are

- i) Project B₁ and B₂ are mutually exclusive
- ii) Project C₁ and C₂ are mutually exclusive and contingent on acceptance of B₂
- iii) Project D is contingent on the acceptance of B₂& C₁

5

- 5 (a) Find the both type of B/C ratio using PW formulation and AW formulation

) Initial Investment = Rs 1,50,000

Annual Benefit = Rs 80,000

Annual Cost = Rs. 25,000

Salvage value = Rs. 21,000

Useful Life = 14 years

MARR = 9% per years

4

- (b Perform sensitivity analysis of the following project over a range of ± 40 % in a) initial investment b) annual net revenue c) salvage value d) useful life

) Initial investment (I) = Rs 22,500

Net annual revenue = Rs3,500

Salvage Value = Rs. 10,000

Useful Life = 6 years

MARR = 10 %

4

- 6 (a) First Cost = Rs 80,000, Salvage Value is 10% of First Cost. The general inflation rate is 5%

)

EOY	1	2	3	4	5
Net Cash Flow	32,000	35,000	33,000	29,000	50,000

Evaluate the PW,if inflation free interest rate is 10%

4

- (b) From the following information, initial cost of asset is Rs 1,00,000 , Salvage value is Rs 20,000, Life of asset is 8 years. Interest rate is 12%, calculate the depreciation by

iii) Sum of The year digit (SOYD) depreciation

iv) Sinking fund depreciation

5

- 7 Write short notes on (Any Two):

a. VAT

b. Drawback of IRR Method

5

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Subject: Engineering Economics (MS301)

- Candidates are required to answer the questions in their own words as far as possible.
- Assume suitable values, with stipulation, if necessary.
- Figures in margin indicate full marks.

- 1 (a) Why engineering economics is necessary for an engineer's? Discuss. 3
- (b) From the standard cost card, it is observed that 1 unit of product A requires 2 labour hours at Rs.10/hr. During a particular month, 800 units of product A were produced consuming 1,800 hours of direct labour, the actual rate of which is Rs 11/hr. Calculate the wages rate, efficiency and total wage variance including adverse and favourable variance. 3
- 2 (a) A person invests a sum of Rs.50000 in a bank at a nominal interest rate of 16% for 15 years. The compounding is monthly. Find the maturity amount of the deposited sum after 15 years. 3
- (b) An equipment costing of Rs. 5,00,000 is estimated to have life of 10 years & expected annual revenue is Rs.1,10,000 with annual cost of Rs.20,000. Determine investment decision from PW, AW & FW formulation to this equipment where salvage value is Rs. 1, 00,000 and MARR is 12% per year. 3
- 3 (a) Roshani wants to deposit an amount P now such that she can withdraw an equal amount of Rs.2000 each year for 3

the first five years and then Rs.3000 for the following 3 years. Calculate what P is if the interest earned is 6% per year. Draw the cash flow diagram.

(b) Use IRR method to evaluate following project when MARR is 20%

4

End of Year	0	1	2	3	4	5
Cash Flow (Rs)	-60,000	20,000	40,000	50,000	50,000	70,000

4 (a) Make a selection from the following two mutually exclusive alternatives

4

Alternatives	A	B
Capital Investment (Rs.)	4,50,000	6,00,000
Annual Revenue (Rs.)	22,000	26,000
Annual Expenses (Rs)	7,450	11,020
Useful Life (Years)	6	8
Market Value (Rs)	25,000	28,000
MARR	10%	10%

Make repeatability assumption method.

(b) Select the best combination of the project where A is independent and B is contingent on C.

Project	A	B	C
Initial Investment	40,000	70,000	50,000
Annual Revenues	15,000	20,000	20,000
Annual Cost	2,500	3,500	0
Useful Life (Yrs)	8	8	8

5

The investment is limited to Rs. 1,20,000 & MARR = 10 %

5 (a) A project has a cost of Rs.10 million, a useful economic life of 30 years. Annual operation and maintenance costs equal to 2% of the capital cost, and annual benefits of Rs.1.5 million. The interest rate is 10% and the cost of the accumulated interest during construction of the project will be ignored. Calculate the benefit cost ratio.

4

(b) Perform sensitivity analysis of the following project over a range of $\pm 40\%$ in a) initial investment b) annual net revenue c) salvage value d) useful life

4

Initial investment (I) = Rs 11,500

Net annual revenue = Rs 3,000

Salvage Value = Rs. 1,000

Useful Life = 6 years

MARR = 10 %

- 6 (a) A company is mechanizing its packing plants by investing Rs 3, 60,000. Estimate for efficiency of design goals, their probability and corresponding annual expenses saving are as follows: 4

Design Goal met (%)	Probability	Annual Expenses Saving(Rs)
85	0.35	40,000
60	0.50	33,000
50	0.15	26,000

The company has another option to invest this money that earns 20% per year elsewhere. Based on Expected PW as decision criterion, determine whether the mechanizing is preferable or not? MARR = 12% and analysis period is 5 years.

- b) We have just purchased a minicomputer at a cost of Rs. 10,500 with an estimated salvage value of Rs 500 and a projected useful life of 4 years. If interest is 10 % per year determine 5
- v) Sum of The year digit (SOYD) depreciation
 - vi) Sinking fund depreciation

- 7 Write short notes on (Any Two): 5

- d. Taxation in Nepal
- e. Drawback of IRR Method
- f. Personal and Corporate tax

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Exam	Regular/Back		
Level	BE	Full Marks	50
Program	Civil	Pass Marks	25
Year/Part	III/I	Time	3 Hrs.

Subject: (Foundation Engineering) (CE317)

- Candidates are required to answer the questions in their own words as far as possible.
- Assume suitable values, with stipulation, if necessary.
- Figures in margin indicate full marks.

- 1 (a) Define the term foundation. What are the different types of foundation? [2]
- (b) The observed SPT value in a deposit of silty fine sand is 34. The test was carried out in a borehole at a depth of 5m from the ground surface. Determine the corrected SPT value for dilatancy and overburden pressure. Take saturated unit weight of soil as 19KN/m³.

- 2 (a) Figure shows a 3 layered backfill behind a 14m high retaining wall with a smooth vertical back. Draw the active earth pressure distribution. [8]

Layer	γ KN/m ³	C KN/m ²	ϕ
1 (5m)	18	0	35°
2 (4m)	19	20	25°
3 (5m)	20	35	0°

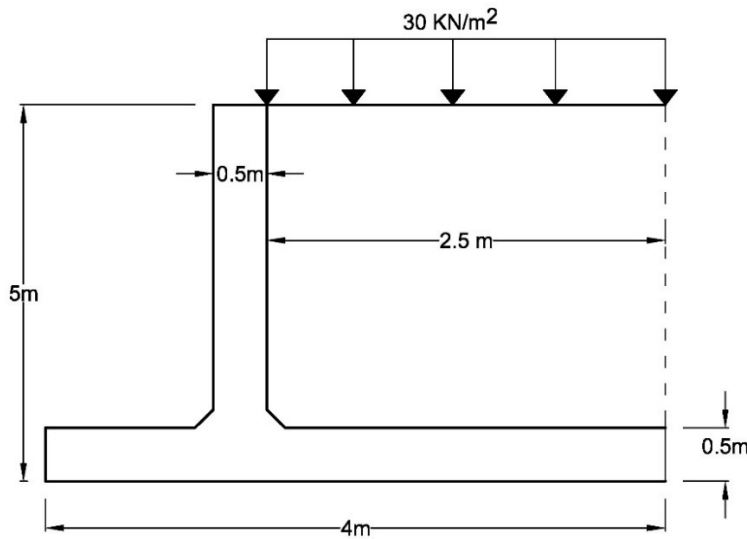
A
 5m
 B
 4m
 C
 5m
 D

WT

- (b) Explain the earth pressure against bracing in cuts. [4]

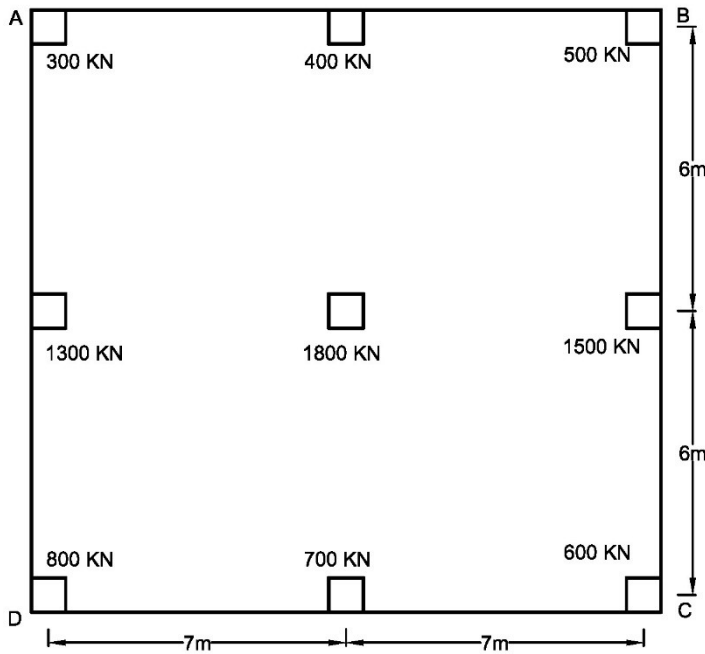
- 3 (a) Derive the expression of bearing capacity using Terzaghi's theory. [5]

- (b) Determine the factor of safety against sliding, overturning and maximum and minimum pressure under the base of the cantilever retaining wall as shown in figure. The approximate shear strength parameters for the soil are $c = 0$, $\phi = 39^\circ$. The unit weight of soil and concrete are 18 KN/m^3 and 24 KN/m^3 respectively. The water table is below the base of the wall. Take $\delta = 27^\circ$ on the base of the wall. The safe bearing capacity of the soil below the base is 500 KN/m^2 . [4]



- 4 (a) Explain the principle of design of footing. [4]

- (b) The plan of a mat of foundation with 9 columns is shown in figure. Assuming that the mat is rigid, determine the soil pressure distribution at point A, B, C, and D. All the columns are of size 0.5m X 0.5 m. [5]



- 5 (a) A pile group consists of 9 piles, diameter 40cm, are arranged in square pattern and 12m length driven in clay. If cohesion on ground surface is 120KN/m^2 and at the base is 180KN/m^2 . Find the load carrying capacity of group pile. Take $\alpha = 0.6$, spacing = 1.5m C/C and FOS = 3. [4]
- (b) What is well foundation? Write its advantages. Explain the different types of well or caissons. [5]
- (c) Explain the dynamic compaction in soil improvement. [3]

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Year/Part	III/I	Time	3 Hrs.

Subject: Foundation Engineering (CE317)

- Candidates are required to answer the questions in their own words as far as possible.
- Assume suitable values, with stipulation, if necessary.
- Figures in margin indicate full marks.

- 1 (a) What are the major criteria to be satisfied in the design of a foundation? [2]
- (b) Differentiate between representative and non-representative soil samples. What are the different sampler design parameters? Explain with their physical meaning. [2+4]
- 2 (a) A 6 m high retaining wall supports 5 m sand (KN/m^3 , $\phi = 0$, $C = 0$) overlying saturated sandy clay (KN/m^3 , $\phi = 0$, $C = 16 \text{ KN/m}^2$). The ground water level is at the upper surface of sand. Determine the Rankine's active force per unit length of the wall and the location of the thrust, assuming that the retaining wall can yield sufficiently to develop an active state. [5]
- (b) How can you represent graphical solution for coulomb's earth pressure (Active Case)? With clean figure, write the stepwise procedures. [3]
- 3 (a) What are coffer dams? Write their significance. How can the earth pressure against bracing in cuts be determined? [1+1+3]
- (b) Show the tentative dimensions of cantilever retaining wall in figure. Determine the maximum bending moment on the cantilever sheet pile supporting a cohesionless backfill ($\phi = 30^\circ$, $\gamma = 18 \text{ KN/m}^3$) of height 9 m. The water level is on both sides of the sheet pile and above 4 m from the dredge level. [1+3]
- 4 (a) What do you mean by Net safe bearing capacity in foundation engineering? Describe the various methods to estimate the settlement in cohesionless soil with the help of necessary sketches and graph. [1+4]
- (b) Write the stepwise procedures for the design of spread foundation. Related formulae is also required to write. [4]
- 5 (a) A mat foundation of size 8 m X 10 m is resting at a depth of 5 m. The foundation is resting on saturated cohesive soil having undrained cohesion of 50 KPa. The soil has unit weight of 19 KN/m^3 . Find the net safe bearing capacity using skemton's method. [4]
- (b) Define negative skin friction in pile. Write a typical situation where negative skin friction may occur. A group of 9 piles with 3 piles in row was driven into a soft clay extending from ground level to a great depth. The diameter and the length of the piles were 30 cm and 10 m respectively. The unconfined compressive strength of the clay is 70 KPa. If the piles were placed 90 cm center to center, compute the allowable load on the pile group on the basis of a shear failure criteria for a factor of safety of 2.5. [1+1+3]
- (c) How the depth of a well foundation is decided? Explain with related formulae. [2+3+2]
-) A circular well of 7 m external diameter and 4 m internal diameter is embedded to a depth of 17 m. The well is subjected to a horizontal force of 900 KN acting at a height of 9 m above the scour level. Determine the allowable total equivalent resisting force due to earth pressure assuming that the tilt is about a point above the base. Take $\phi = 32^\circ$, $\gamma = 19 \text{ KN/m}^3$ and factor of safety for passive resistance = 2.
Mention the advantage of preloading and at which condition do you prefer it?

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Exam	Regular/Back		
Level	BE	Full Marks	50
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Year/Part	III/I	Time	3 hrs.

Subject: Engineering Hydrology (CE319)

- *Attempt all questions*
- *Candidates are required to answer the questions in their own words as far as possible.*

- Assume suitable values, with stipulation, if necessary.
- Provide necessary figures with labeling.
- Figures in margin indicate **full marks**.

1.a. Hydrology is the science of water, justify this statement. What are the types of precipitation? Describe the hydro-meteorological development in Nepal. [2+1+2]

b. A catchment area has seven rain gauge stations. In a year, the annual rain fall recorded by the gauges are as follows: [3+2]

Station	P	Q	R	S	T	U	V
Rainfall(cm)	130	142	118	108	165	102	146

- Determine the standard error in the estimation of mean rain fall in the existing set of rain gauge.
- For a 7% error in the estimation of mean rainfall, calculate the minimum number of additional rain gauge stations to be established.

2.a. A storm with 10 cm precipitation produced a direct runoff of 5 cm. the duration of rainfall was 16 hours and its distribution is as follows: [5]

Time from start	0	2	4	6	8	10	12	14	16
Cumulative rain fall	0	0.4	1.3	2.8	5.1	6.9	8.5	9.5	10

Estimate the index of the storm.

b. Explain initial losses in hydrology. Describe Penman's equation for estimation of potential evapotranspiration. [1+4]

3.a. With the following data, compute the discharge of a stream. [5]

Distance from left bank(m)	0	1	3	5	7	9	11	12
Depth(m)	-	1.5	2	2.5	2	1.5	1	-
Rev	-	45	65	115	95	50	35	-
Duration of observation(sec)	-	100	100	150	150	100	100	-

Taking rating equation as $V = aN + b$ where $a = 0.52$ and $b = 0.02$ V in m/s N in rev/sec.

b. Describe the components of a hydrograph. What are the uses and limitations of a unit hydrograph? [5]

4.a. Given the ordinates of 4 h unit hydrograph as below derive the ordinates of 12 h unit hydrograph by using S curve method.(5) [5]

Time in Hour	0	4	8	12	16	20	24	28	32	36	40
Ordinate of 4h unit hydrograph	0	25	85	120	140	125	95	55	28	20	5

b. An analysis of annual flood series of a stream indicated the mean value and standard deviation of flood series as $950 \text{ m}^3/\text{s}$ and $205 \text{ m}^3/\text{s}$. find the magnitude of flood of return period of 500 years and 1000 years. Assume that the annual flood series follows Gumbel distribution. [6]

5.a. Define design flood. Explain flood prediction by rational and empirical methods. [4]

b. Classify the wells. Explain how ground water can be recharged. [1+4]

****The End****

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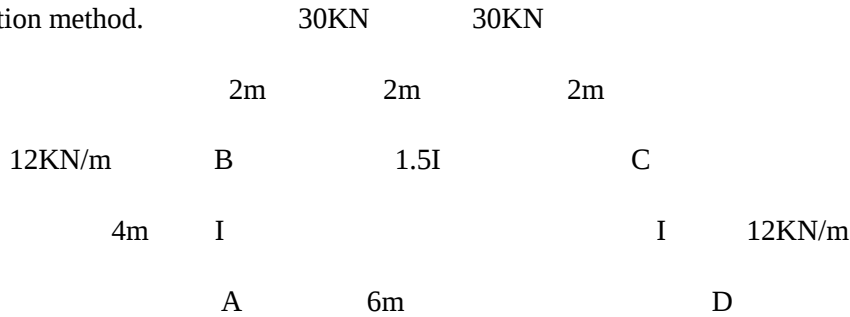
Exam	Regular/Back		
Level	BE	Full Marks	50
Program	Civil	Pass Marks	25
Year/Part	III/I	Time	3 Hours

Subject: Theory of Structures – II (CE314)

- *Attempt All questions.*
- *Candidates are required to answer the questions in their own words as far as possible.*
- *Assume suitable values, with stipulation, if necessary. Figures in margin indicate full marks.*

1(a) Define indeterminate structure? Give its physical meanings and its types. **1+3**

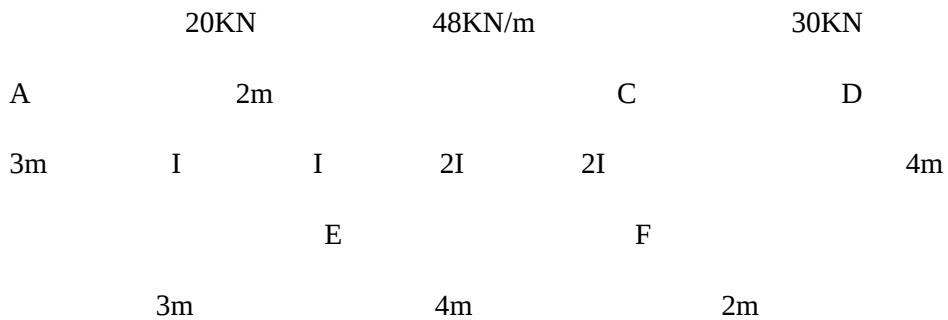
(b) Define Carry over factor and Distribution factors? Analyse the symmetrical portal frame by using Moment distribution method. **1+5**



2(a) State and prove the Castigliano's Theorem. **[5]**

(b) What is Load factor and shape factor? Show that the plastic moment of the beam of rectangular section is 50% greater than the bending moment within elastic limit. **2+3**

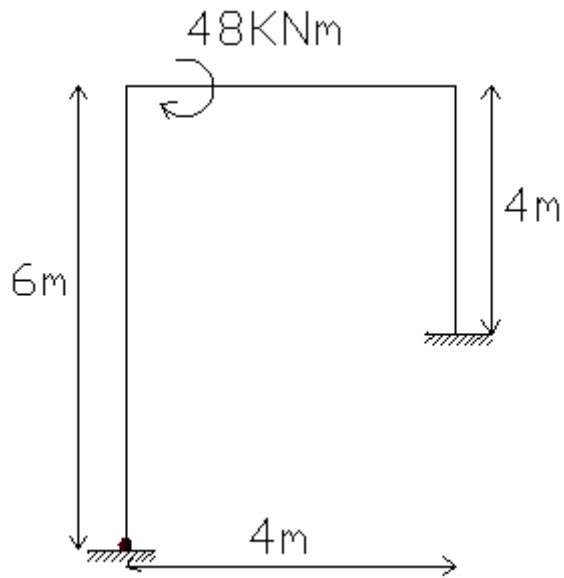
3(a) Analyze the frame by using slope deflection method and draw bending moment diagram. **[5]**



(b) What is Mueller Breslau principle and how it is used to determine the shape of an influence line diagram of a structural quantity in a statically indeterminate beam? Show in a simple example. **[5]**

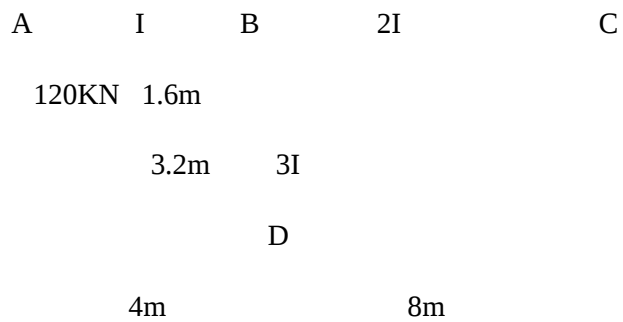
4 Use force (flexibility) method to solve the frame as shown in figure below. EI is constant throughout.

[10]



5 Define Flexibility and stiffness matrix? Using the stiffness matrix method, Analyze the frame.

2+8



Best of Luck

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Subject: Transportation Engineering – I (CE318)

- Candidates are required to answer the questions in their own words as far as possible.
- Assume suitable values, with stipulation, if necessary.
- Figures in margin indicate full marks.
- Attempt all question.

- 1.a) Classify road of Nepal according to NRS 2070 and mention the merit and demerit of highway. 2+3
- b) What are the various requirements of an ideal highway alignment? Explain various factors controlling the highway alignment with neat sketch 5
2. a) Derive the expression for super elevation. Write the objectives of extra widening. 2+2
- b) Calculate the minimum sight distance required to avoid head on collision of two cars approaching from the opposite directions at 90 and 60 kmph. Assume a reaction time of 2.5 seconds, coefficient of friction of 0.7 and a brake efficiency of 50% in either case. 6
- 3.a) Write the importance of transition curve and explain the types of gradient. 2+2
- b) A valley curve is formed by a descending gradient of 1 in 40 which meets an ascending gradient of 1 in 30. 6
- i. Design the total length of valley curve if the design speed is 100 kmph so as to fulfil both comfort condition and headlight sight distance for night driving after calculating the SSD required
- ii. Find the position of the lowest point of the valley curve to locate a culvert.
- 4.a) What are the basic requirements of hair pin bends? Derive the total length of symmetrical Hair- pin bend of the first type with neat sketches 2+4
- b) What are the requirements of good highway drainage system? Discuss importance of drainage in a hill road. 2+2
- 5.a) List out the tests for road aggregates. What is loss angles abrasion value and how it is determined for aggregates? What are the recommended values for base, sub- base & wearing layers? 5
- b) What are the various tests carried out in bitumen? Briefly explain the viscosity test and its engineering application. 2+3

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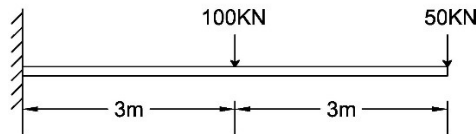
2074Chaitra

Subject: Theory of Structures II(CE314)

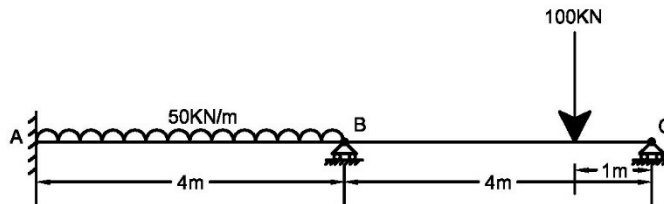
- Candidates are required to answer the questions in their own words as far as possible.
- Assume suitable values, with stipulation, if necessary.
- Figures in margin indicate full marks.

1 (a) Describe different types of indeterminacies of the structural system and their physical meanings. [3]
 Ch1

(b) Using castigliano's theorem, determine the vertical deflection at the 50KN load in [4]
 Ch2 the beam shown in figure below.

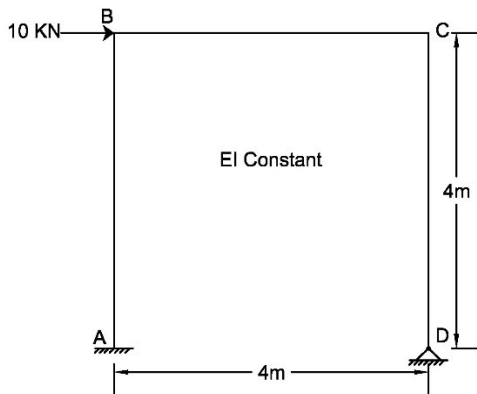


2 (a) Analyse the continuous beam as shown in figure below and draw SFD and BMD. [8]
 Ch3 Use flexibility method.

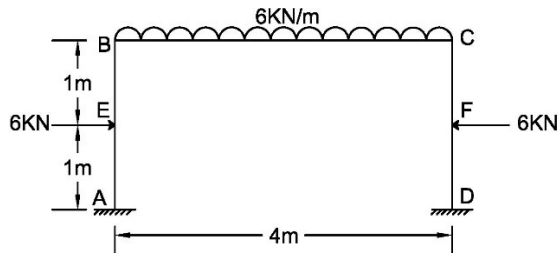


(b) Derive the expression for horizontal reaction for the two hinged arch by strain [4]
 CH3 energy principle.

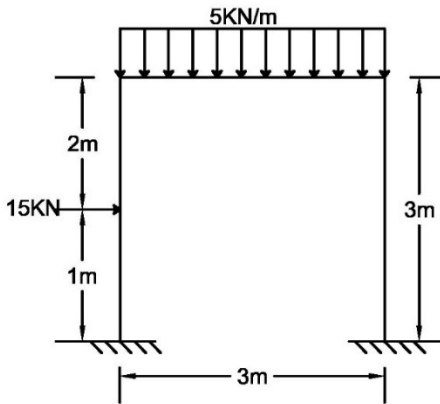
3 (a) Analyse the portal frame shown in figure below by slope deflection method. The end [6]
 CH4 A is fixed and end D is hinged.



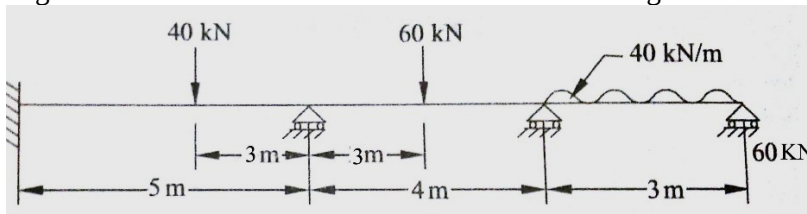
(b) Analyse the portal frame by using moment distribution method. The frame is fixed [8]
 Ch5 at A and D and has rigid joints at B and C. Draw bending moment diagram.



- 4 (a) Explain influence line diagram as system specific diagram. What is Muller Breslau principle and how it is used to determine the shape of an influence line diagram of a structural quantity in statically indeterminate beam. Show with a simple example. [1+4=5]
 CH6
- (b) Analyse the continuous beam shown in figure below by Use stiffness matrix method. [8]
 CH7



- 5 CH8 Determine the plastic moment capacity M_p required for the continuous beam shown in figure given below. Assume the same section is used throughout. [4]



*** The End ***

**MIDWESTERN UNIVERSITY
FACULTY OF ENGINEERING
Examination Control Division**

2073 Chaitra

Exam	Regular/Back		
Level	BE	Full Marks	50
Program	Civil	Pass Marks	25
Year/Part	III/I	Time	3 Hrs.

Subject: Estimating and Valuation (CE 324)

- Attempt all questions
- Candidates are required to answer the questions in their own words as far as possible.
- Assume suitable values, with stipulation, if necessary.
- Figures in margin indicate full marks.

- 1 (a)** Explain the term provisional items. What are the various sub-heads of the report of an estimate of a building? Support your answer with a brief description. **[6]**
- (b)** Prepare a preliminary estimate for a building with the following data: plinth area is 1800 Sq.m. and rate NRs. 3600.00 per sqm. Add for i) Special architectural design =15% ii) Water supply and sanitary fittings =10% iii) Electric installation=15% iv) Miscellaneous =5% v) Contingencies =5%. **[5]**
- 2 (a)** Calculate the quantity of materials for the following items. **[6]**
a) PCC (1:4:8) for 10 cum. b) Brick Masonry (1:6) for 10 cum. c) plaster Work (1:4) per 25 sqm.
- (b)** State and explain various method of valuation of a building. **[5]**
- 3 (a)** The tenant of a house has agreed to increase his rent provided the building is renovated by the owner according to his requirements at a cost of Rs. 200,000. Workout the increase allowing interest on capital @ 12% and redemption of capital @7%. The future life of the building is ascertained to be 40 years. The increase of municipal tax will be 10% of the increase of rent. **[6]**
- (b)** Define complete estimate with their branches. **[4]**
- 4 (a)** From the given figure -A and B below calculate the details estimate of quantity per necessary description of works. **[10+8]**

