[B17CE4101]
IV B. Tech I Semester (R17) Regular Examinations
TRANSPORTATION ENGINEERING - II
CIVIL ENGINEERING
MODEL QUESTION PAPER

TIME: 3Hrs.   **Max. Marks: 70**

Answer **ONE Question** from **EACH UNIT.**
All questions carry equal marks.

		UNIT-I	
1.	(a).	Draw a typical cross-section of a permanent way. Discuss in brief the basic functions of various components of a railway track.	7M
	(b).	Define gauge of a railway track. Mention the gauges existing in different countries of the world.	7M
		(OR)	
2.	(a).	What are the characteristics of a good ideal rail joint?	7M
	(b).	Describe the methods of correcting the creep.	7M
		UNIT-II	
3.	(a).	Explain the necessity of gradients. Discuss all the types of gradients giving their permissible values adopted on Indian Railways.	7M
	(b).	A 6 degrees curve branches off from a 3 degrees main curve in an opposite direction in the layout of a B.G.Yard. If the speed on branch line is limited to 35.5 Kmph. determine the speed restriction on the main line. Given cant deficiency = 7.62 cm.	7M
		(OR)	
4.	(a).	What are the objects of providing transition curves on railways? Explain as to how the length of a transition curve is decided?	7M
	(b).	Define super-elevation and show how it is worked out. Also discuss the factors affecting super-elevation.	7M
		UNIT-III	
5.	(a).	Draw a neat diagram of simple right-hand turnout and show its various component parts. Explain the working principle of the turnout.	7M
	(b).	Explain clearly the location and application of Outer Signal, Home Signal, Starter Signal, Advance starter signal and Point-indicators.	7M
		(OR)	
6.	(a).	Define Interlocking and explain the principle of interlocking. Describe the various mechanical devices used for interlocking.	7M
	(b).	Describe the different types and shapes of switches.	7M
		UNIT-IV	
7.	(a).	Name the different characteristics of aircrafts. How do they affect the planning and design of airports?	7M
	(b).	Enumerate the various factors which you would keep in view while selecting a suitable site for an airport.	7M
		(OR)	

8.	(a).	What is a wind rose diagram? What is its utility? What are its types? Explain each type.	7M
	(b).	Discuss in brief the need of air traffic control.	7M
UNIT-V			
9.	(a).	What are the requirements of a good port?	7M
	(b).	Explain the terms: Littoral Drift, Neap tide, Spring tide and Fetch.	7M
(OR)			
10.	(a).	Describe various types of Harbour signals.	7M
	(b).	Compare mound type breakwater with wall type breakwater.	7M

[B17CE4101]

[B17CE4102]
IV B. Tech I Semester (R17) Regular Examinations
WATER RESOURCES ENGINEERING-I
CIVIL ENGINEERING
MODEL QUESTION PAPER

TIME: 3Hrs. **Max. Marks:70**

Answer **ONE Question** from **EACH UNIT.**

All questions carry equal marks.

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UNIT-I			
1.	(a).	Explain the working of any two automatic rain gauges.	7M
	(b).	The ordinater (in mm) of a rainfall mass curve for a storm which recommended at 6.30 hours recorded by a self recording rain gauge at 15min interval are as follows: 0, 12.4, 22.1, 35.1, 52.7, 63.7, 81.9, 109.2, 123.5, 132.6, 143.3, 146 and 146. Construct the hyetograph of this Storm for a uniform interval of 15 minutes.	7M
(OR)			
2.	(a).	Explain briefly the Infiltration process. What are the factors that influence the process of Infiltration?	7M
	(b).	Write the procedure for estimation of evaporation using evaporation pan with a neat sketch.	7M
UNIT-II			
3.	(a).	Explain the procedure for the construction of Unit Hydrograph with a neat sketch.	7M
	(b).	Define S-Hydrograph and explain the procedure of computing its ordinates.	7M
(OR)			
4.	(a).	Define runoff. Explain the various factors affecting it.	7M
	(b).	Explain the applications of Unit Hydrograph.	7M
UNIT-III			
5.	(a).	Explain the different types of Tube Wells.	7M
	(b).	An aquifer has an average thickness of 50m and an aerial extent of 150 ha, Estimate the available ground water storage if the aquifer is unconfined and fluctuation in GWT is observed as 10m.	7M
(OR)			
6.	(a).	State Darcy's law and its limitations.	7M
	(b).	Derive an equation for Specific yield of an open well by Recuperation test.	7M
UNIT-IV			
7.	(a).	Explain the benefit cost ratio method of economic analysis of a multi purpose irrigation project.	7M
	(b).	Explain the engineering investigations required for reservoir planning and how the reservoir capacity is determined.	7M

		(OR)	
8.	(a).	What is the procedure for determining the reservoir capacity for a specific yield from the mass inflow curve?	7M
	(b).	Explain about reservoir sedimentation control.	7M
		UNIT-V	
9.	(a).	Explain any two methods for assessment of irrigation water charges.	7M
	(b).	Discuss the methods of Improving duty.	7M
		(OR)	
10.	(a).	Explain Irrigation Efficiencies.	7M
	(b).	Explain methods of Irrigation.	7M

[B17CE4102]

[B17CE4103]
IV B. Tech I Semester (R17) Regular Examinations
PROJECT PLANNING AND MANAGEMENT
CIVIL ENGINEERING
MODEL QUESTION PAPER

TIME: 3Hrs.   **Max. Marks:70**

Answer **ONE Question** from **EACH UNIT.**

All questions carry equal marks.

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		UNIT-I	
1.	(a).	Explain network rules.	7M
	(b).	Develop the Network diagram and determine the critical path for the given data below:	7M

Activity	A-B	B-C	B-D	C-D	C-E	D-E	E-F
Duration	7	10	15	7	12	3	5
Preceding Act(in days)	-	A-B	A-B	B-C	B-C	B-D, C-D	C-E, D-E

		(OR)	
2.	(a).	Explain how do you number the events of a network by Fulkerson's law.	7M
	(b).	Explain the activity times EST, LST, EFT and LFT in detail.	7M
		UNIT-II	
3.	(a).	Explain the steps in time-cost optimization of a project network.	7M
	(b).	Explain the terms direct cost, indirect cost, cost slope, outage loss of a project.	7M
		(OR)	
4.	(a).	1) Evaluate the optimum time duration and optimum cost for the given data below: [CO5,K5,PO2]	7M

Activity	Normal time	Crash time	Normal cost (Rs.)	Crash cost (Rs.)
10-20	4 days	3 days	400	600
20-30	5 days	2 days	300	750
20-40	7 days	5 days	360	540
30-40	4 days	2 days	500	1000

Indirect cost = Rs.250/ day.

	(b).	What do you understand by cost-slope. How do you determine it?	7M
		UNIT-III	
5.	(a).	Explain the steps in updating process.	7M
	(b).	Explain the problem of resources allocation. How do you solve it.	7M
		(OR)	
6.	(a).	Explain resources smoothing procedure in detail.	7M
	(b).	Explain when a network is to be updated.	7M

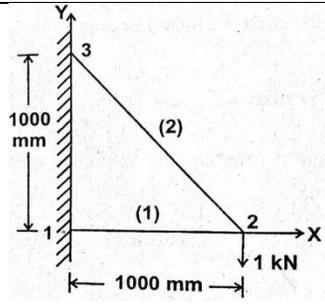|		**UNIT-IV**	
7.	(a).	Explain briefly how a tender is called for bidding procedure.	7M
	(b).	Explain ant two types of contracts in detail.	7M
		(OR)	
8.	(a).	Explain the essential elements of muster roll form and work order in detail.	7M
	(b).	Explain reverse tendering procedure in detail.	7M
		UNIT-V	
9.	(a).	Explain the provisions of Min Wages Act, 1948.	7M
	(b).	Explain principals of organisation and management	7M
		(OR)	
10.	(a).	Explain the provisions of workmen's compensation Act.	7M
	(b).	Explain the recruitment process and training development of employees in an organisation.	7M

[B17CE4103]

[B17 CE 4104]
I B. Tech I Semester (R17) Regular Examinations
FINITE ELEMENTS METHODS OF ANALYSIS
Civil Engineering
MODEL QUESTION PAPER

TIME: 3Hrs.   **Max. Marks: 70 M**

Answer **ONE Question** from **EACH UNIT.**
All questions carry equal marks.

			M
		UNIT-I	
1.	**a).**	Explain about Rayleigh-Ritz method.	**4M**
	b).	Determine the deflection at the center of a simply supported beam of span 'L', subjected to uniformly distributed load of w/unit length throughout its length by using Rayleigh-Ritz method.	**10M**
		OR	
2.	**a).**	Explain about Weighted residual methods.	**4M**
	b).	Solve the differential equation for a physical problem expressed as $$\frac{d^2y}{dx^2} + 100 = 0, 0 \leq x \leq 10$$ with boundary conditions as y(0) = 0 and y(10) = 0 by using i) Pont collocation method,　　　　　ii) Sub-domain collocation method, iii) Least squares method and　　　　iv) Galarkin's method.	**10M**
		UNIT-II	
3.		Explain briefly about discretization procedure in finite element method.	**14M**
		OR	
4.		Explain briefly about element shapes, node numbering, mesh generation and interpolation functions,	**14M**
		UNIT-III	
5.	**a).**	Determine the nodal displacements and forces for the bar loaded as shown in **Fig. 1**. **Fig. 1**	**14M**
		OR	
6.	**a).**	A truss structure is subjected to a load of 1 kN as shown in **Fig. 2**. Determine the nodal displacements and forces if the element stiffness of the truss is 10 kN/mm.	**14M**

Fig. 2

		UNIT-IV	
7.		Determine the shape functions at the interior point 'P' for the triangular element shown in **Fig. 4**. **Fig. 3**	**14M**
		OR	
8.	**a).**	Distinguish between CST and LST elements.	**4M**
	b).	Explain about plane stress and plane strains in CST elements.	**10M**
		UNIT-V	
9.		Develop shape functions for axisymmetric triangular element.	**14M**
		OR	
10.		The nodal coordinates for an axisymmetric triangular element shown in Fig. 4 are given below $r_1 = 20$ mm; $z_1 = 10$ mm $r_2 = 40$ mm; $z_2 = 10$ mm $r_3 = 30$ mm; $z_3 = 50$ mm Determine the strain-displacement matrix for the element. **Fig. 4**	**14M**
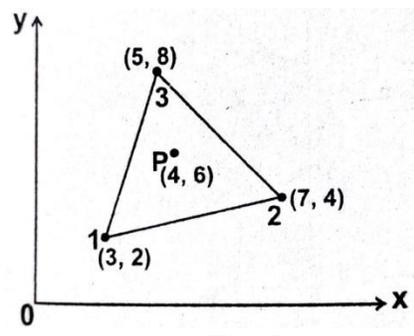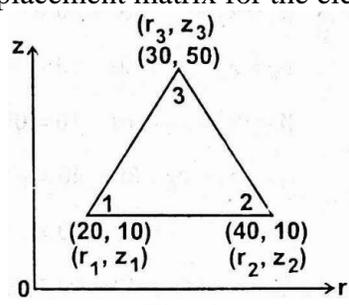
[B17CE4105]
IV B. Tech I Semester (R17) Regular Examinations
SOLID WASTE MANAGEMENT
(Elective-I)
CIVIL ENGINEERING
MODEL QUESTION PAPER

TIME: 3Hrs.   **Max. Marks:70**

Answer **ONE Question** from **EACH UNIT.**
All questions carry equal marks.

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		UNIT-I	
1.	(a).	Explain about sources, types and characteristics of solid waste.	7M
	(b).	What are the problems due to improper disposal of solid waste? Explain.	7M
		(OR)	
2.	(a).	Explain the physical and chemical characteristics of solid wastes in detail.	7M
	(b).	Define the term refuse. Explain different sources of refuse generation in detail.	7M
		UNIT-II	
3.	(a).	Explain the functional elements of the solid waste management.	7M
	(b).	Explain how waste is handled at each source in detail.	7M
		(OR)	
4.	(a).	Explain the collection methods of solid wastes.	7M
	(b).	Explain the process of reuse and recycling of solid wastes.	7M
		UNIT-III	
5.	(a).	Explain the processes in transfer station.	7M
	(b).	Explain about various segregation and processing methods of solid waste in detail.	7M
		(OR)	
6.	(a).	Explain various methods of segregation of solid wastes.	7M
	(b).	Explain in detail how solid wastes are transported from the source.	7M
		UNIT-IV	
7.	(a).	Explain composting in detail.	7M
	(b).	Explain the advantages and disadvantages of solid waste incineration method.	7M
		(OR)	
8.	(a).	Explain incineration process in detail.	7M
	(b).	Explain the processing and transformation of solid wastes.	7M
		UNIT-V	
9.	(a).	Explain Disposal methods of solid wastes.	7M
	(b).	Explain the operation of landfill in detail.	7M
		(OR)	
10.	(a).	Write a critical note on deep well injection of solid waste.	7M
	(b).	List various energy recovery processes. Explain any two processes in detail.	7M

[B17CE4105]

IV B. Tech I Semester (R17) Regular Examinations
EXPANSIVE SOILS
(Elective-I)
CIVIL ENGINEERING
MODEL QUESTION PAPER

TIME: 3Hrs.   **Max. Marks:70**

Answer ONE Question from EACH UNIT.
All questions carry equal marks.
*****

		UNIT-I	
1.		Explain briefly about the origin, occurrence and distribution of expansive soils in India.	14M
		(OR)	
2.		Explain about distress symptoms with a relevant case study.	14M
		UNIT-II	
3.	(a).	Explain various clay minerals with neat sketches.	7M
	(b).	Explain how you determine swell potential of clay soil in laboratory.	7M
		(OR)	
4.	(a).	Explain various methods of field exploration in clayey deposits.	7M
	(b).	Explain different types of soil structures with neat sketches.	7M
		UNIT-III	
5.	(a).	Explain about soil-moisture suction.	7M
	(b).	Explain about empirical methods used in prediction of soil heave.	7M
		(OR)	
6.		Explain briefly about double and oedometer tests with neat sketches wherever required.	14M
		UNIT-IV	
7.		Explain In general the design consideration used for stiffened mats and under reamed piles.	14M
		(OR)	
8.		Explain the design consideration followed for individual and continuous footings in expansive soils	14M
		UNIT-V	
9.	(a).	What is cement stabilization of soils? Explain soil-cement reactions and factors that affect cement stabilization of soil.	7M
	(b).	Explain briefly about the purpose of granular pile anchors in expansive soils.	7M
		(OR)	
10.	(a).	Explain about under reamed piles in expansive soils.	7M
	(b).	Explain about CNS concept and how it would control the swelling behavior of expansive soil.	7M

[B17CE4106]

[B17CE4107]
IV B. Tech I Semester (R17) Regular Examinations
TRAFFIC ENGINEERING
(Elective-I)
CIVIL ENGINEERING
MODEL QUESTION PAPER

TIME: 3Hrs.   **Max. Marks: 70**

Answer **ONE Question** from **EACH UNIT.**
All questions carry equal marks.

		UNIT-I	
1.	(a).	Describe in brief about different Traffic Characteristics.	7M
	(b).	Write in Detail about methods of Measuring Spot Speeds.	7M
		(OR)	
2.	(a).	Explain briefly about Moving Observer method.	7M
	(b).	Explain how Travel time and Journey speed data is presented?	7M
		UNIT-II	
3.	(a).	What is meant by PCU? List out PCU Equivalents as per Indian Practice	7M
	(b).	Explain in detail about Level of Service Concept in the HCM Manual.	7M
		(OR)	
4.	(a).	Write in detail about the factors affecting Capacity and Level of service?	7M
	(b).	Write about Capacity of Multi-lane Rural Highway without access control.	7M
		UNIT-III	
5.	(a).	Define the terms: Parking Accumulation, Parking Volume, Parking Load, Parking Duration, Parking Index and Parking Turn-over.	7M
	(b).	What are the ill-effects of Parking?	7M
		(OR)	
6.	(a).	List out the Statistical Methods used for Analysis of Accident Data. Explain any one of it in detail.	7M
	(b).	Write about different parameters that are showing its effect on Road Accidents.	7M
		UNIT-IV	
7.	(a).	Describe about At-grade and Grade separated Junctions	7M
	(b).	What are the advantages and disadvantages of Rotary Intersections?	7M
		(OR)	
8.	(a).	Write about different types of Three-leg interchange.	7M
	(b).	Explain about Diamond and Half clover leaf interchanges with neat sketches.	7M
		UNIT-V	
9.	(a).	Describe in brief about Area Traffic Control.	7M
	(b).	What are the advantages and Disadvantages of Traffic Signals?	7M
		(OR)	
10.	(a).	List out the Major Pollutants. Write in brief about effects of Pollutants and measures for controlling Air Pollution.	7M

	(b).	Explain about the measures to be taken to control Traffic Noise.	7M

[B17CE4107]
[B17CE4108]
IV B. Tech I Semester (R17) Regular Examinations
PRESTRESSED CONCRETE STRUCTURES
CIVIL ENGINEERING
MODEL QUESTION PAPER

TIME: 3Hrs.   **Max. Marks:70**

Answer **ONE Question** from **EACH UNIT.**
All questions carry equal marks.
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		UNIT-I	
1.	(a).	Write the advantages of prestressed concrete and its applications	7M
	(b).	Explain prestressing systems?	7M
		(OR)	
2.	(a).	Why high strength steel and high strength concrete are necessary for PSC	7M
	(b).	Explain concept of prestreeing	7M
		UNIT-II	
3.	(a).	List out the types of prestressing methods?	4M
	(b).	A pretensioned beam 250 mm wide and 300 mm deep is prestressed by 12 wires each of 7 mm diameter initially stressed to 1200 N/mm^2 with their centroids located 100 mm from the soffit, estimate the final percentage loss of stress due to elastic deformation, creep, shrinkage and relaxation using IS:1343-1980 code and the following data: Relaxation of steel stress = 90 N/mm^2 ,Es = 210N/mm^2, Ec = 35 N/mm^2, Creep coefficient ø =1.6, Residual shrinkage strain = 3×10^{-4}	10M
		(OR)	
4.	(a).	Explain various losses in pre-tensioning and post-tensioning systems	4M
	(b).	A pre-tensioned beam of rectangular cross-section, 150 mm wide and 300 mm deep, is prestressed by 8-7 mm wires located 100 mm from the soffit of the beam. If the wires are initially tensioned to a stress of 1100 N/mm^2,Calculate their stress at transfer and the effective stress after all losses; given the following data	10M

	Up to time of transfer	Total
Relaxation of steel	35N/mm^2	70 N/mm^2
Shrinkage of concrete	100×10^{-6}	300×10^{-6}
Creep co-efficient	-----	1.6

		$E_s = 210 kN/mm^2$ $E_c = 31.5 kN/mm^2$	
		UNIT-III	
5.	(a).	Explain the concept of load balancing.	4M
	(b).	A concrete beam of symmetrical I-section spanning 8 m has width and thickness of flanges equal to 200 and 60 mm respectively. The overall depth of beam is 400 mm. The thickness of web is 80 mm. the beam is prestressed by a parabolic cable with an eccentricity of 150 mm at the centre and zero at the supports with an effective force of 100 kN. The live load on the beam is 2 kN/m. draw the stress distribution diagram at the central section for; (a) Prestress + Self weight(density of concrete=24 kN/m) (b)Prestress + Self weight+ Live load.	10M
		(OR)	
6.	(a).	Explain about basic assumptions in analysis of prestress?	2M
	(b).	A prestressed concrete beam supports a live load of 4 kN/m over a simply supported of span of 8 m. The beam has an I-section with an overall depth of 400 mm. The thickness of the flanges and web are 60 and 80 mm respectively. The width of flanges is 200 mm. The beam is to be prestressed by an effective prestressing force of 235 kN at a suitable eccentricity such that the resultant stresses at the soffit of the beam at the centre of the span is zero. (a) Find the eccentricity required for the force. (b) If tendon is concentric, what should be the magnitude of the prestressing force for the resultant stress to be zero at the bottom fibre of the central span section.	12M
		UNIT-IV	
7.	(a).	Explain modes of shear failures in prestressed concrete beams?	7M
	(b).	A pretensioned, T-section has a flange which is 300 mm wide 200 mm thick. The rib is 150 mm wide by 350 mm deep. The effective depth of the cross section is 500 mm. Given $A_p = 200 \ mm^2$ $f_{ck} = 50 \ N/mm^2$ and $f_p = 1600 \ N/mm^2$. Estimate the ultimate moment capacity of the T-section using the Indian standard code regulations.	7M
		(OR)	
8.	(a).	Explain IS code provisions for shear	4M
	(b).	The support section of prestressed concrete beam, 120 mm wide and 250 mm deep, is required to support an ultimate shear force of 60 kN. The compressive prestress at the centroidal axis is 5 MPa. The characteristic cube strength of concrete is 40 MPa. The cover to the tension reinforcement is 50 mm if the characteristic tensile strength of steel in stirrups is 250MPa , design suitable reinforcements at the section using IS 1343 code specification.	10M
		UNIT-V	
9.	(a).	Explain code provisions for bond and transmission length	6M
	(b).	A Pretensioned beam of rectangular section, with a width of 200 mm and 500	8M

		mm overall depth, is prestressed by five wires of 7 mm diameter located 100 mm from the soffit. The maximum shear force at a particular section is 100 kN. If the modular ratio is 6, calculate the bond stress developed , assuming a) the section as uncracked , b) the section as cracked	
		(OR)	
10.	(a).	A pre-tensioned beam is prestressed using 5 mm diameter wires with an initial stress of 80 % of the ultimate tensile strength of steel (f_{pu}=1600 MPa) the cube strength of concrete at transfer is 30 MPa. (a) calculate the transmission length, (b) compute the bond stress at ¼ and ½ the transmission length from the end and (c) calculate the overall average bond stress.	7M
	(b).	Estimate the transmission length at the ends of a pre-tensioned beam prestressed by 7 mm diameter wires. Assume the cube strength of concrete at transfer as 42 MPa.	7M

[B17CE4108]

[B17CE4109]
IV B. Tech I Semester (R17) Regular Examinations
GROUND IMPROVEMENT TECHNIQUES
(Elective-II)
CIVIL ENGINEERING
MODEL QUESTION PAPER

TIME: 3Hrs. **Max. Marks:70**

Answer **ONE Question** from **EACH UNIT.**
All questions carry equal marks.
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		UNIT-I	
1.	(a).	Explain various factors that affect field compaction of soils?	7M
	(b).	Explain in detail the different types of drains used for in-situ densification of cohesive soils with neat sketches?	7M
		(OR)	
2.	(a).	Describe various methods of installation of stone columns?	7M
	(b).	Explain various types of rollers used in field compaction of soils.	7M
		UNIT-II	
3.	(a).	Explain different types of grouts giving one example to each.	7M
	(b).	Explain various categories of grouting with neat sketches wherever necessary.	7M
		(OR)	
4.	(a).	Explain various components of grout plant.	7M
	(b).	What is Tube-A-Manchette. How grouting is done using it.	7M
		UNIT-III	
5.	(a).	Explain various applications of geotextiles in accordance with their functions.	7M
	(b).	Explain any two tests carried out for suitability of geotextiles as reinforcement in soil.	7M
		(OR)	
6.		Explain different tests you would conduct to determine the physical and hydraulic properties of geotextiles?	14M
		UNIT-IV	
7.	(a)	What is reinforced soil. How is it different from reinforced concrete?	4M
	(b)	Explain in detail the components of Reinforced soil	10M
		(OR)	
8.	(a).	What are the various applications of reinforced soil?	4M
	(b).	Explain various factors that affect angle of interfacial friction.	7M
		UNIT-V	
9.	(a).	Explain Ruthfutch's Method of proportioning soils for Mechanical stabilization?	6M
	(b).	What is lime stabilization of soils? Explain various engineering benefits of lime	8M

		stabilization of soils.	
		(OR)	
10.	(a).	What is cement stabilization of soils? Explain soil-cement reactions and factors that effect cement stabilization of soil.	7M
	(b).	Explain various in-situ methods used in stabilization of soils.	7M

[B17CE4109]

IV B. Tech I Semester (R17) Regular Examinations
TRANSPORTATION PLANNING
(Elective-II)
CIVIL ENGINEERING
MODEL QUESTION PAPER

TIME: 3Hrs.   **Max. Marks: 70**

Answer **ONE Question** from **EACH UNIT.**
All questions carry equal marks.

		UNIT-I	
1.	(a).	Describe the term: Urban Form, Urban Spatial Structure, Zoning and Infrastructure.	7M
	(b).	Explain about Location Theory of Urban Planning.	7M
		(OR)	
2.	(a).	Demonstrate Density-Saturation Gradient Method.	7M
	(b).	Explain about Operational Land-Use Models	7M
		UNIT-II	
3.	(a).	Explain in brief about Urban Transportation Modes	7M
	(b).	Explain in brief about Traffic Congestion.	7M
		(OR)	
4.	(a).	Write about Automatic Incident Detection process in ITS	7M
	(b).	Explain about Electronic Road Pricing and Automatic Vehicle Classification.	7M
		UNIT-III	
5.	(a).	Write an Overview on the Forecasting Process.	7M
	(b).	Explain in brief about Trip Generation?	7M
		(OR)	
6.	(a).	What is meant by Trip Distribution? Explain in brief about Fratar Method..	7M
	(b).	Explain in brief about Trip Assignment.	7M
		UNIT-IV	
7.	(a).	Explain the factors affecting Elasticities	7M
	(b).	What is meant by Marginal Cost? Explain the concept with any suitable example	7M
		(OR)	
8.	(a).	Explain the concept of Pricing and Subsidy Polices in the field of Urban Transportation.	7M
	(b).	Explain in detail about Consumer Surplus measure process.	7M
		UNIT-V	
9.	(a).	What is meant by TSM? What are its objectives and Scope?	7M
	(b).	Write about Long-Range Versus TSM Planning.	7M

		(OR)	
10.	(a).	Explain in brief about TSM Planning Cycle.	7M
	(b).	Write in brief about Strategic Management Framework for TSM.	7M

[B17CE4110]
[B17CE4111]
IV B. Tech I Semester (R17) Regular Examinations
URBAN HYDROLOGY
(Elective-II)
CIVIL ENGINEERING
MODEL QUESTION PAPER

TIME: 3Hrs.   **Max. Marks: 70**

Answer **ONE Question** from **EACH UNIT.**
All questions carry equal marks.

		UNIT-I	
1.		Explain Urbanisation and its effect on water cycle	14M
		(OR)	
2.	(a).	Discuss the effect of urbanisation on hydrology	14M
		UNIT-II	
3.	(a).	What are the methods of estimation of time of concentration for design of urban drainage systems	14M
		(OR)	
4.	(a).	What is meant by Urban drainage system and Explain the Design storms for urban drainage systems	14M
		UNIT-III	
5.	(a).	Explain the peak flow estimation by rational method,	7M
	(b).	Explain the peak flow estimation NRCS curve number approach	7M
		(OR)	
6.	(a).	What are the elements of drainage system and explain the necessity of open channel?	14M
		UNIT-IV	
7.	(a).	What are the storm water drainage structures, and design of storm water network	14M
		(OR)	
8.	(a).	What are constructed wetlands? And discuss about models available for storm water management?	14M
		UNIT-V	
9.	(a).	What is the interrelation between water resources investigation and urban planning processes and write about planning objectives.	14M
		(OR)	
10.	(a).	Discuss the issues to be concentrated upon typical urban drainage master plan	14M

[B17CE4111]

IV B. Tech I Semester (R17) Regular Examinations
WATER RESOURCES ENGINEERING-II
CIVIL ENGINEERING
MODEL QUESTION PAPER
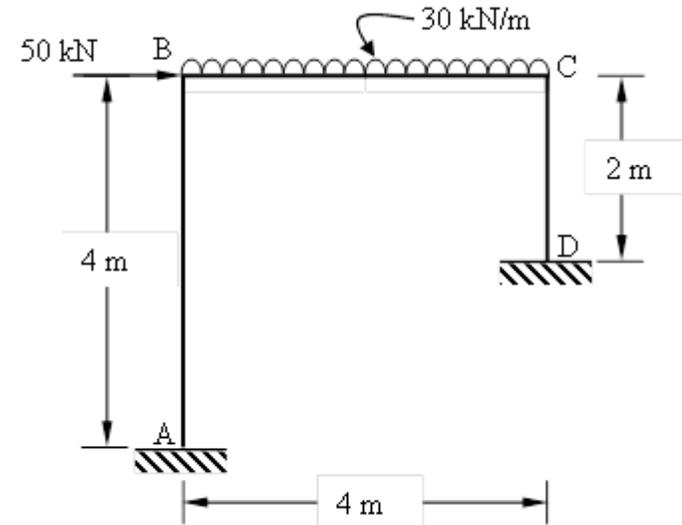
TIME: 3Hrs.   **Max. Marks:70**

Answer ONE Question from EACH UNIT.

All questions carry equal marks.

*****

		UNIT-I	
1.	(a).	Differentiate Kennedy's and Lacey's theories.	7M
	(b).	Design an irrigation channel using Kennedy's silt theory to carry a discharge of 45 cumecs. Take n=0.0225 and m=1.05. The channel has bed slope of 1 in 5000.	7M
		(OR)	
2.	(a).	Using Lacey's theory, design an irrigation channel for the following data: Silt factor, f=1 and side slope= ½:1	7M
	(b).	Give a complete classification of canals.	7M
		UNIT-II	
3.	(a).	Discuss in brief various modes of failure of a gravity dam.	7M
	(b).	Derive an expression for the base width of the elementary profile for no tension case.	7M
		(OR)	
4.	(a).	Explain the design features of an Ogee spillway.	7M
	(b).	Explain the causes of failures of earth dams.	7M
		UNIT-III	
5.	(a).	Explain the method of Independent variables for estimating the pressures under impervious floors of weirs.	7M
	(b).	Discuss briefly the components of various types of falls with neat sketches. Also discuss the suitability of each type.	7M
		(OR)	
6.	(a).	Explain the method of fixing the water way of drain in an aqueduct.	7M
	(b).	Define Head Regulator. State the functions of a distributing head regulator and cross regulator.	7M
		UNIT-IV	
7.	(a).	Define River Training works. Explain its Objectives.	7M
	(b).	Explain about Marginal Embankment and Guide banks.	7M
		(OR)	

8.	(a).	Explain the differences between Groynes and Cutoffs.	7M
	(b).	Explain about Bank Pitching and Launching Aprons.	7M
UNIT-V			
9.	(a).	Explain the development of Hydro Power in India.	7M
	(b).	The load on the hydel project varies from a minimum of 15000KW to a maximum of 40000KW, two generators of capacities 25000KW each have been installed. Calculate Plant factor, Load factor & Utilization factor.	7M
(OR)			
10.	(a).	Explain the component parts of hydel power project.	7M
	(b).	Explain the assessment of available power.	7M

[B17CE4201]

IV B. Tech I Semester (R17) Regular Examinations
ADVANCED STRUCTURAL ANALYSIS
CIVIL ENGINEERING
MODEL QUESTION PAPER

TIME: 3Hrs.   **Max. Marks:70**

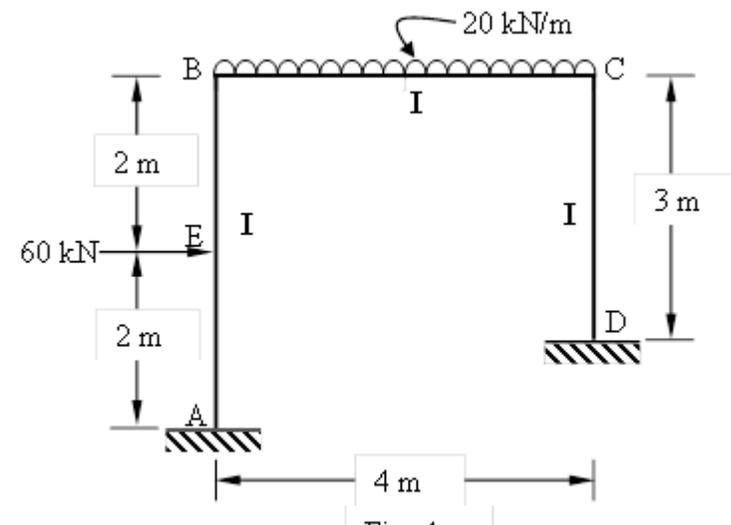Answer **ONE Question** from **EACH UNIT.**

All questions carry equal marks.

*****

	UNIT-I	
1.	(a). A fixed beam of span 6 m carries a point load of 120 kN at 2 m from the left support. The moment of inertia for the different proportions are as shown in Fig. 1. Using column analogy method, determine the end moments. Fig. 1	14M
	(OR)	
2.	Analyse the frame shown in Fig. 2 by column analogy method and draw bending moment diagram. Fig. 2	14M
	UNIT-II	
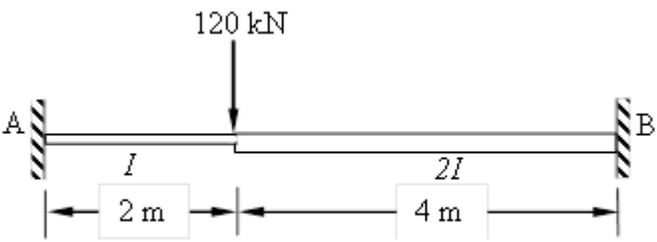
3.	Analyse the portal frame ABCD shown in Fig. 3 by flexibility method. Take EI as constant throughout.	14M
30 kN/m
50 kN B   C
2 m
D
4 m
A
4 m
Fig. 3	
	(OR)	
4.	Analyse the portal frame ABCD shown in Fig. 4 by flexibility method. Take EI as constant throughout.	14M
	UNIT-III	
5.	Using the displacement method, analyse the frame shown in Fig. 4.	14M
20 kN/m
B   C
I
2 m
I   I   3 m
60 kN E
2 m   D
A
4 m
Fig. 4	
	(OR)	
6.	Using the displacement method, analyse the frame shown in Fig. 3.	14M
	UNIT-IV	
7.	Analyse the intermediate frame of a multistory structure shown in Fig. 5 for following data.	14M

Spacing of frames   = 3.6 m
DL on floors   = 4 kN/m²
LL on floors   = 4 kN/m²
Self weight of beams = 5 kN/m for beams of span 9 m
                      = 4 kN/m for beams of span 6 m
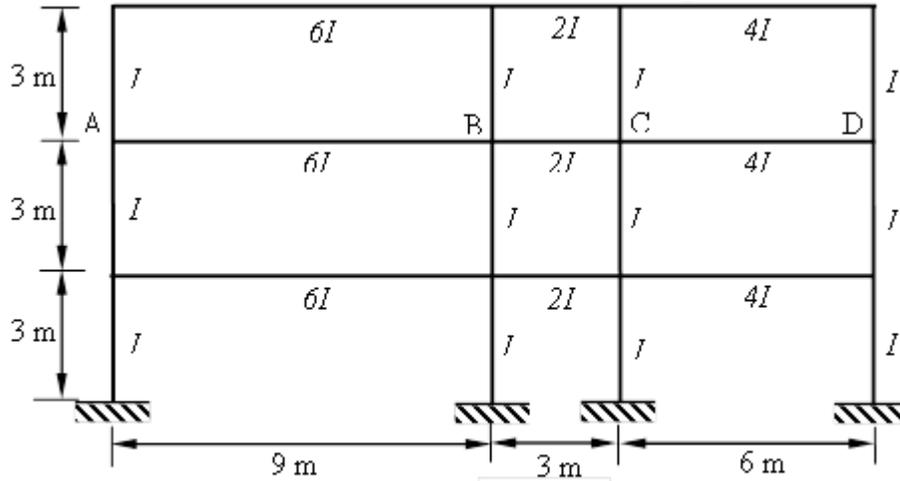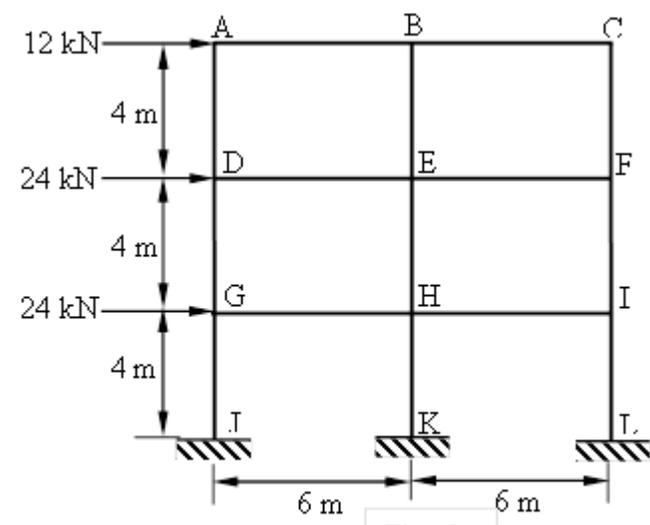   = 3 kN/m for beams of span 3 m

Fig. 5

(OR)

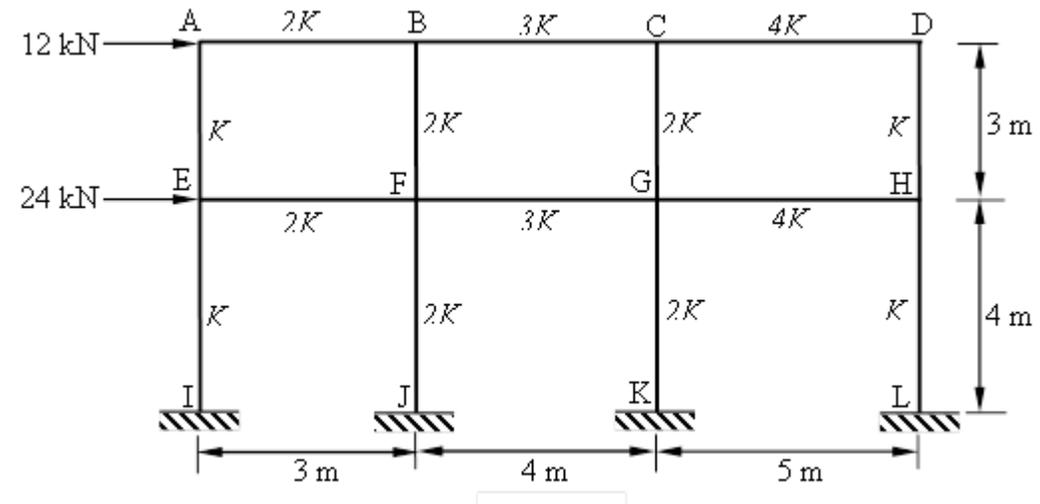| 8.	Analyse the intermediate frame of a multistory structure shown in Fig. 5 for following data.
	    Spacing of frames = 5 m
	    DL on floors = 4 kN/m²
	    LL on floors = 4 kN/m²
	    Self weight of beams = 5 kN/m for beams of span 9 m
	             = 4 kN/m for beams of span 6 m
	             = 3 kN/m for beams of span 3 m
		14M

UNIT-V

9.	Analyse the frame shown in Fig. 6 by portal method.	14M

	12 kN→ A B C
	     4 m
	24 kN→ D E F
	     4 m
	24 kN→ G H I
	     4 m
	     J K L
	      6 m 6 m
	Fig. 6	

	(OR)	
10.	Analyse the frame shown in Fig. 7 by factor method.	14M

	12 kN→ A 2K B 3K C 4K D
	    K 2K 2K K 3 m
	24 kN→ E F G H
	    2K 3K 4K
	    K 2K 2K K 4 m
	    I J K L
	     3 m 4 m 5 m
	Fig. 7	

[B17 CE 4202]

[B17CE4203]
IV B. Tech I Semester (R17) Regular Examinations
ENVIRONMENTAL IMPACT ASSESSMENT
(Elective-III)
CIVIL ENGINEERING
MODEL QUESTION PAPER

TIME: 3Hrs.   **Max. Marks: 70**

Answer **ONE Question** from **EACH UNIT**
All questions carry equal marks
*****

		UNIT-I	
1.	(a).	Explain elements of EIA in detail.	7M
	(b).	Explain how an EIS statement is formulated.	7M
		(OR)	
2.	(a).	Enumerate governmental policies for protection of environment.	7M
	(b).	Explain the guidelines for preparation of EIS.	7M
		UNIT-II	
3.	(a).	Discuss different environmental indices in detail.	7M
	(b).	Explain the importance of air and water attributes in EIA.	7M
		(OR)	
4.	(a).	Explain about the socio-economical attributes.	7M
	(b).	Explain different indices and their importance in EIA study.	7M
		UNIT-III	
5.	(a).	Explain different methodologies used for EIA study.	7M
	(b).	Explain the criteria for selection of methodology in EIA assessment.	7M
		(OR)	
6.	(a).	Explain matrix and adhoc methodologies in detail.	7M
	(b).	Explain checklist and network methods in detail.	7M
		UNIT-IV	
7.	(a).	Explain how do you predict the impact on air and water	7M
	(b).	Write about prediction and assessment of human and aesthetic attributes in EIA	7M
		(OR)	
8.	(a).	Write in detail how do you predict the impacts of socio economic aspects	7M
	(b).	Explain the prediction and assessment of noise and air	7M
		UNIT-V	
9.	(a).	Explain the significance of cost-benefit analysis.	7M
	(b).	Explain the impact of any thermal power plant on environment.	7M
		(OR)	
10.	(a).	Explain about controlling measures of environmental impacts.	7M
	(b).	Explain the impact of mining industry on environment.	7M

[B17CE4203]

[B17CE4204]
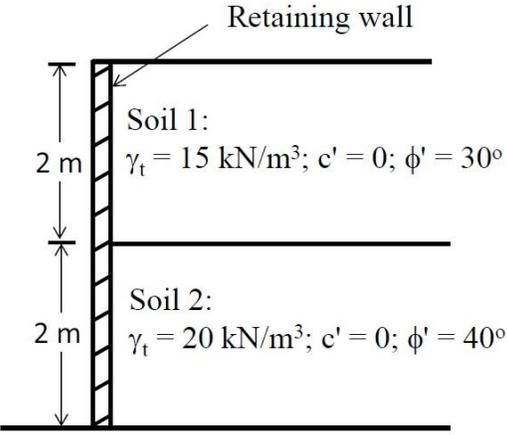**IV B. Tech I Semester (R17) Regular Examinations**
EARTH RETAINING STRUCTURES
(Elective-III)
CIVIL ENGINEERING
MODEL QUESTION PAPER

TIME: 3Hrs.   **Max. Marks:70**

Answer **ONE Question** from **EACH UNIT.**
All questions carry equal marks.
*****

		UNIT-I	
1.	(a).	Explain the differences between Rankine's and Coulomb's theories of earth pressure	7M
	(b).	Two different soil types (Soil 1 and Soil 2) are used as backfill behind a retaining wall as shown in the figure, where γ_t is the total unit weight, and c' and φ' are effective cohesion and effective angle of shearing resistance. Determine the resultant active earth force per unit length (in kN/m) acting on the wall.	7M
		(OR)	
2.	(a).	Two different soil types (Soil 1 and Soil 2) are used as backfill behind a retaining wall as shown in the figure, where γ_t is the total unit weight, and c' and φ' are effective cohesion and effective angle of shearing resistance. The water table is at depth of 2m below ground level. Determine the resultant active earth force per unit length (in kN/m) acting on the wall.	7M

Retaining wall

Soil 1:
$\gamma_t = 16 \, kN/m^3$; $c' = 0$; $\phi' = 30°$

2 m

Soil 2:
$\gamma_t = 20 \, kN/m^3$; $c' = 0$; $\phi' = 40°$

2 m

	(b).	Explain Culmann's Method for determining active earth pressure in cohesionless soil.	7M
		UNIT-II	
3.	(a).	Briefly explain different types of failures of retaining walls.	7M
	(b).	A cantilever retaining wall is to be constructed to retain a backfill of height 6m, having $c = 0$, $\emptyset = 33^0$ and $\gamma = 18 \, kN/m^3$. The bearing capacity of the foundation soil is 250 kN/m^2. Check the stability of retaining wall.	7M
		(OR)	
4.	(a).	Explain different types of retaining walls and their general proportions for the design.	7M
	(b).	A counterfort retaining wall is to be constructed to retain a backfill of height 10m, having $c = 0$, $\emptyset = 43^0$ and $\gamma = 20 \, kN/m^3$. The bearing capacity of the foundation soil is 300 kN/m^2. Check the stability of retaining wall.	7M
		UNIT-III	
5.	(a).	Explain various types of fills used in reinforced earth structures?	7M
	(b).	Explain the various theories of reinforced earth?	7M
		(OR)	
6.		Check for the stability of a reinforced earth retaining wall of 6 m height, having 0.5 m embedment into foundation soil. The width of the wall is 3.5 m. The properties of the backfill are $\phi = 32^0$, $\gamma = 18.5 \, kN/m^3$ and properties of fill material are $\phi = 33^0$, $\gamma = 19$ kN/m^3. The wall is reinforced with GRP strips of 8 cm width and the reinforcement is placed with horizontal and vertical spacing of 0.5 m and 0.8 m respectively. The strip has a tensile strength of 45 kN and interfacial friction angle of 32^0. Take coefficient of friction at the base of the wall as 0.4.	14M
		UNIT-IV	
7.	(a)	Explain various types of anchoring systems used in anchored sheet pile walls?	7M
	(b)	An anchored bulkhead retains cohesion less backfill up to a height of 6.0 m above the dredge line. The average properties of soil, both above and below dredge line are as follows: $\gamma = 18.5 \, kN/m^3$, $\gamma_{sat} = 20 \, kN/m^3$, $\emptyset = 28^0$. The positions of water table and anchor rod are at 3 m and 2m below ground level respectively. Determine the depth of embedment of the bulkhead and the force in the anchor rod by the equivalent beam method. Take i/H = 0.07.	7M
		(OR)	
8.		Derive the expression for depth of embedment for sheet pile in cohesionless soils with	14M

		neat sketch of earth pressure diagram?	
		UNIT-V	
9.	(a).	What is a Braced cut? When is it preferred? Mention various components of Braced cut.	7M
	(b).	It is required to construct a braced excavation up to a depth of 5 m in stiff clay having a unit weight of 19kN/m^3 and an unconfined compressive strength of 140 kN/m^2. Bracing systems consisting of struts and Wales are to be installed at 1.2 m, 3 m and 4.5 m below ground level. Determine the strut forces and maximum bending moment in the Wales?	7M
		(OR)	
10.	(a).	Explain various types of coffer dams with neat sketches?	7M
	(b).	A braced excavation is to be carried out up to a depth of 6 m in stiff clay having a unit weight of 20 kN/m^3 and an unconfined compressive strength of 150 kN/m^2. Bracing systems consisting of struts and Wales are to be installed at 1.3 m, 3 m and 4.6 m below ground level. Determine the strut forces and maximum bending moment in the Wales?	7M

[B17CE4204]

IV B. Tech I Semester (R17) Regular Examinations
PAVEMENT ANALYSIS AND DESIGN
(Elective-III)
CIVIL ENGINEERING
MODEL QUESTION PAPER

TIME: 3Hrs.   **Max. Marks: 70**

Answer **ONE Question** from **EACH UNIT.**
All questions carry equal marks.

UNIT-I			
1.	(a).	What is the difference between a tack coat and a prime coat? Which requires the use of a less viscous asphalt?	7M
	(b).	Explain in detail about Equivalent Single-Wheel Load.	7M
(OR)			
2.	(a).	Explain the terms with suitable examples: ADT, AADT, Growth Factor and Truck Factor.	7M
	(b).	Write in detail about effects of Transient & Moving Loads in pavement design	7M
UNIT-II			
3.	(a).	List out the models developed for Material Characterization in Visco-Elastic Theory. Explain any one model in detail.	7M
	(b).	Explain in brief about Three-Layer Systems.	7M
(OR)			
4.	(a).	What are the stress inducing factors in flexible pavements? Explain them in brief.	7M
	(b).	Write about Steady state of vibration.	7M
UNIT-III			
5.	(a).	Write about Curling stresses in Finite Slab.	7M
	(b).	Explain briefly about stresses and deflection due to loading.	7M
(OR)			
6.	(a).	Explain about Effect of Volume Change on Concrete.	7M
	(b).	Write about bearing stresses on Dowel bars.	7M
UNIT-IV			
7.	(a).	List out all and explain briefly design parameters for designing a Flexible Pavement according to Asphalt Institute Method.	7M
	(b).	Explain in detail about Performance period and Analysis period according to AASHTO Method for designing a flexible pavement.	7M
(OR)			
8.	(a).	Explain in brief about different types of Overlays for Flexible pavements.	7M
	(b).	Explain about Effective Thickness method of Asphalt Overlay on Asphalt Pavement.	7M
UNIT-V			
9.	(a).	Explain the design of Dowel bars using IRC Method with a suitable example	7M
	(b).	Explain the design of Tie bars using IRC Method with a suitable example	7M

(OR)			
10.	(a).	Explain about Modulus of Subgrade reaction.	7M
	(b).	Explain about different Design variables considered for rigid pavement design as per AASHTO Method.	7M

[B17CE4205]