Bharatiya Vidya Bhavan's

SARDAR PATEL COLLEGE OF ENGINEERING

(Government Aided Autonomous Institute)
Munshi Nagar, Andheri (W) Mumbai – 400058

Re- Examination
8 July 2022

B. Tech Civil Sem VIII

Program: UG Civil
Course Code: PC-BTC801
Course Name: Engg. Eco, Est. & Costing

Duration: 3 Hours
Maximum Points: 100
Semester: VIII

8/7/22.

Notes:

- **Question 1 is compulsory**. Attempt **ANY 4** out of remaining 5
- Assume **suitable data** if necessary and **state it clearly**
- Clearly write units everywhere. Marks will be deducted in each place units are missing
- Figure on right indicate **maximum points** for the given question, **course outcomes attained,** and **Bloom's Taxonomy Level,** performance indicators

Q.		Points	CO	BL	PI
1	a) New tyres are needed for earthmoving equipment and two types are available: radial and diagonal. The manufacturing company has given following data. Make a recommendation on tyre type based on out of pocket commitment if project needs the equipment for 20,000 hours.	10	1,2	5	11.1, 11.2
	b) Explain the following terms: Cost, price and value.	5	3	1	1.4.1
	c) What is a JV contract? Justify its use for an infrastructure project.	5	6	4	2.2.3
2	a) Explain how knowledge of economics can help management of construction equipment and decision making in running a company.	10	2,3	4	11.1.1
	b) Estimate the following quantities for the plan and section of a residential structure shown in Figure 1. i. Internal plastering in 1:6 CM for bedroom and drawing room (including ceiling) ii. 50 mm thick damp proof course	10	5	3	2.4
3	a) A crane is purchased at a cost of Rs. 10 Lakh and has an estimated salvage value of Rs.75,000/- at the end of the recovery period. Calculate the book value for the crane with a useful life of five years.	10	2	3	11.1

Details	Radial tyre	Diagonal tyre
Useful life	5,000 hours	4,000 hours
Cost per tyre (INR)	5,00,000/-	3,80,000/-
Transportation cost per tyre (INR)	10,000/-	10,000/-

	Use double declining method. If the salvage value is Rs. 1 lakh explain how calculation of book value will change.				
b)	Draft a notice inviting tender for construction of a highway road of 1.1km length, estimated to cost Rs.4.5crores and is to be completed in 15 months.	5	6	6	10.2
c)	As per design A, a bridge costs Rs. 50 Cr to construct and operation cost is Rs. 7.5 Crores per year. As per design B, cost is Rs. 75 Cr and operation cost is Rs. 5 Crores per year. Considering the structure to be permanent, determine which design is better if rate of return expected is 12%.	5	2,3	5	11.2.1

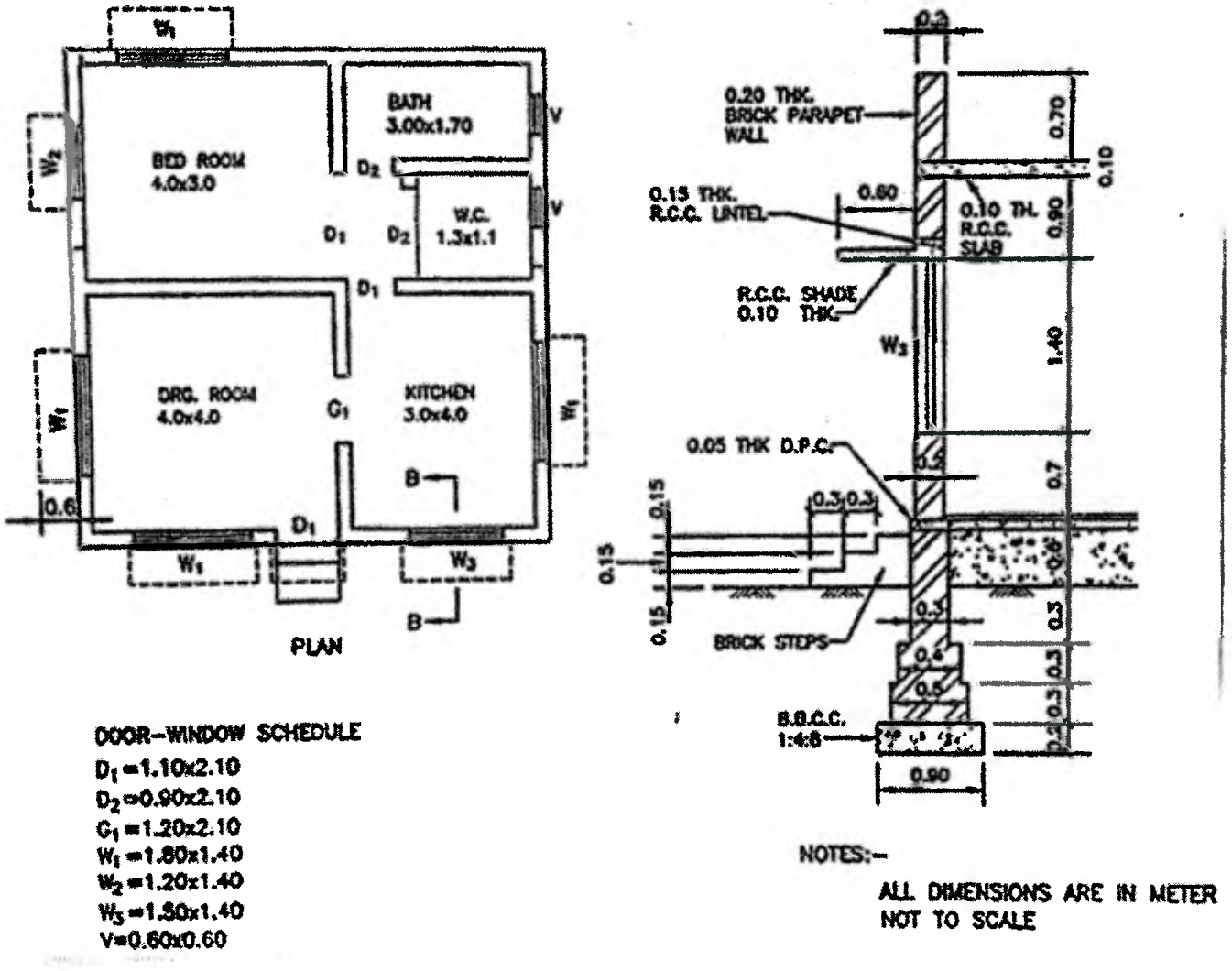
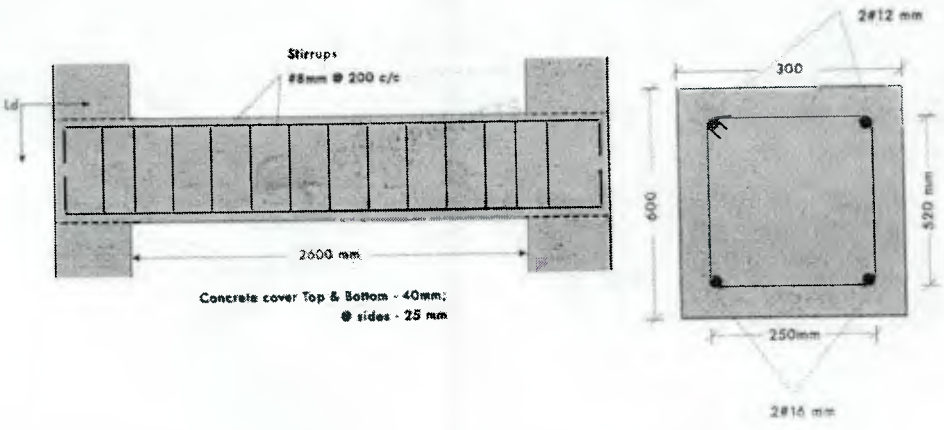


Figure 1: Plan and Section of residential structure

4	a) Prepare a bar bending schedule for an RCC beam shown in Figure 2. Calculate the quantity of cement, sand and aggregate required. Also calculate the % volume of reinforcement. Assume $L_d = 50d$.	10	5	6	2.2.2
					
	Figure 2: Details of RCC beam				
	b) What is rate analysis? Explain the process to do the rate analysis for excavation of soft soil for a depth up to 1.5 m and lead of 50 m using relevant IS codes.	5	5	2,3	1.3.1
	c) What are detailed specifications? Why are they necessary in a construction project?	5	4	1,3	1.4
5	a) A contractor needs to decide whether to bid for project A or B. Both projects will need an initial investment of Rs. 5 Lakhs and the income from both is shown below. Based on present value, recommend which project is preferred if rate of return expected by the contractor is 10%	10	1,2	5	11.2.1

Year	1	2	3	4
Project A (INR)	5,000/-	17,500/-	30,000/-	42,500/-
Project B (INR)	40,000/-	15,000/-	15,000/-	15,000/-

	b) An RMC company sells RMC for Rs. 6,800 per m^3. The fixed cost of the company for RMC production is Rs.92,000/- per month and variable cost is Rs.2,200/- per m^3. Calculate the breakeven quantity of concrete per month.	5	3	3	11.1
	c) Explain how a spider-web diagram can help in sensitivity analysis	5	2,3	2	1.4
6	a) The design of a dam given by company SS costs Rs. 50 crores to construct and an expense of Rs. 7.5 crores every year to operate and	10	5	5	11.2.1

	maintain it. The design of the dam given by AN, on the other hand, would require Rs. 75 crores to construct and an annual expense of Rs. 5 crores to operate and maintain. Both the designs have considered 100 years as the design life of the dam. The minimum required rate of return is five per cent. Which design should be given a go-ahead?				
b)	A road is to be constructed having a formation width of 10 m. Side slopes proposed are 2:1 in banking and cutting. Calculate the quantity of earthwork using mean area method, given the following data	10	2,3	3	1.4

Distance (m)	0	20	40	60	80	100	120	140
Ground Level (m)	73.5	73.7	73.5	73.1	72.7	72.6	72.5	72.3
Formation Level (m)	72.5	72.7	72.9	73.1	73.3	73.3	73.3	73.3

1	Single payment compound amount factor	F/P (find F, given P)	SPCAF $= (F/P, i, n) = (1 + i)^n$
2	Single-point present worth factor	P/F (find P, given F)	SPPWF $= (P/F, i, n) = \dfrac{1}{(1+i)^n}$
3	Uniform series compound amount factor	F/A (find F, given A)	USCAF $= (F/A, i, n) = \dfrac{(1+i)^n - 1}{i}$
4	Sinking fund deposit factor	A/F (find A, given F)	SFDF $= (A/F, i, n) = \dfrac{i}{(1+i)^n - 1}$
5	Capital recovery factor	A/P (find A, given P)	CRF $= (A/P, i, n) = \dfrac{i \times (1+i)^n}{(1+i)^n - 1}$
6	Uniform series present worth factor	P/A (find P, given A)	USPWF $= (P/A, i, n) = \dfrac{(1+i)^n - 1}{i \times (1+i)^n}$
7	Arithmetic gradient conversion factor	A/G (find A, given G)	AGF $= (A/G, i, n) = \left[\dfrac{1}{i} - \dfrac{n}{(1+i)^n - 1}\right]$
8	Geometric series factor	P/g (find P, given g)	GGF $= (P/g, i, n) = \dfrac{1 - \dfrac{(1+g)^n}{(1+i)^n}}{(i-g)}$

9 Uniform series present worth factor for infinite life: $1/i$

Figure 3: Time value of money equations.

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Final year B.Tech (Civil) Sem VIII 17/5/22

End Semester Examination

17 May 2022

Program: UG Civil
Course Code: PC-BTC801
Course Name: Engg. Eco, Est. & Costing

Duration: 3 Hours
Maximum Points: 100
Semester: VIII

Notes:

- **Question 1 is compulsory**. Attempt **ANY 4** out of remaining 5
- Assume **suitable data** if necessary and **state it clearly**
- Clearly write units everywhere. Marks will be deducted in each place units are missing
- Figure on right indicate **maximum points** for the given question, **course outcomes attained,** and **Bloom's Taxonomy Level.**

Q. No.		Points	CO	BL
Q. 1	a) Prepare an approximate estimate of a municipality school building for 1000 students in order to assess the funds. The following details are available: Carpet area per student: 1.5 sq.m. Area for corridors, verandah, etc. : 20% of plinth area Wall area: 15% of plinth area Plinth area rate: Rs. 22,000/sq.m. Cost of water supply and sanitation: 11% of building cost Cost of electrification: 10% of building cost Contingency: 5% of total cost Work charged establishment: 2.5% of total cost	10	5	3
	b) Explain the following terms: future worth, net present value, cash flow diagram	5	2	
	c) Why are specifications important and how do they contribute to the cost of a project?	5	4	
Q. 2	a) Figure 1 shows the plan and section of a load bearing structure. Estimate the quantity of earthwork in excavation for foundation Estimate the quantity of BBCC (1:3:6) in foundation (excluding stairs) Prepare an abstract for the quantities	10	5	2

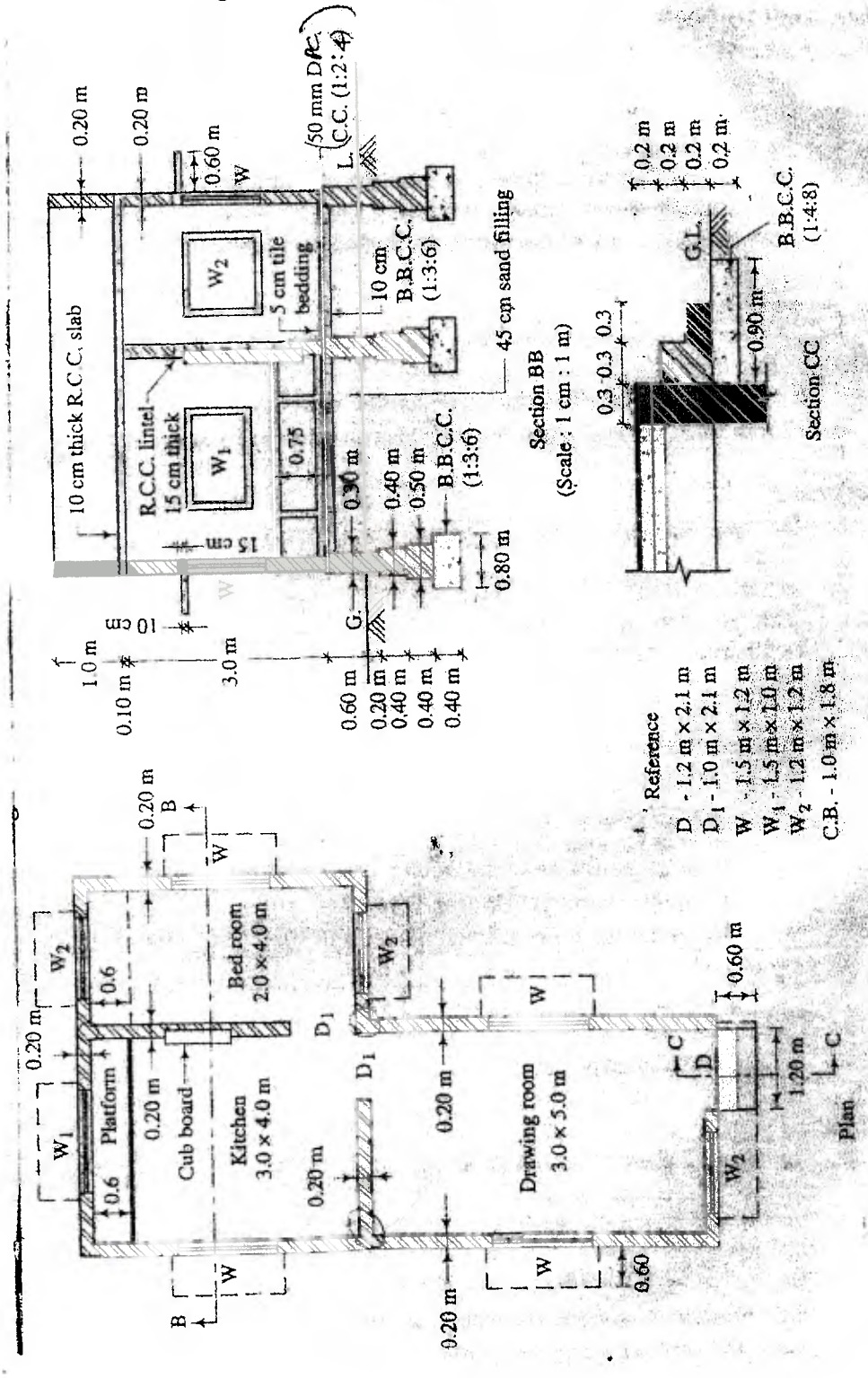
	b) What is an informal tender? c) Explain the essential requirements of a contract	5 5	6 6	
Q. 3	a) A construction company owns five trucks. It is predicted that more trucks will be required to haul soil to and from a site for a large project. The options available are to purchase additional trucks at Rs. 16 Lakhs and spend Rs. 1.2 Lakhs every year on maintenance, or rent them at Rs. 3,000/- per day and spend Rs. 90,000/- for maintenance. Assuming no salvage value for the trucks and average service life as 6 years, with expected interest rate of 10%, recommend if the company should buy or rent the additional trucks if number of days in a year when more than 5 trucks are required is 150. See Figure 1 for factors. b) Explain how construction economics is different from economics in other sectors. c) Estimate the quantity of material required for a single brick thick wall of height 3.1 m and length of 4.2 m, with 1:3 cement mortar	10 5 5	2,3 1 5	5
4	a) A pile driving rig has an initial cost of Rs. 20 Lakhs with a salvage value of Rs. 4 Lakhs. If its service life is 4 years, determine the book value of the rig at the end of each year of its service life using the straight line method as well as the sum of years method. Which method is considered as an accelerated method? b) What is a bar bending schedule? State its use and importance in a construction project c) Differentiate between earnest money and security deposit for a tender	10 5 5	2 5 6	
5	a) What is a contract? How is different from an agreement? Explain the cost plus fixed fee contract and BOT type of contract. b) A scraper costs Rs. 5 Lakhs. If it is expected to earn 1 Lakh per year for 10 years and expected maintenance and other expenses are estimated to be Rs. 5,000/- per year, calculate the breakeven point and perform a sensitivity analysis for the income. Assume salvage value as 10% of its cost and an interest rate of 10%.	10 10	6 2,3	
6	a) Calculate the quantity of earthwork for a road having a formation width of 10m, side slopes are 2:1 in banking and 1.5:1 in filling, using the following data for mid-sectional area method.	10	5	

	Dist (m)	0	40	80	120	160	200	240	280	320		
	GL (m)	50.9	50.5	50.8	50.6	50.7	51.2	51.4	51.3	51		
	FL (m)	51.8	Downward gradient 1 in 200									
	b) Explain the importance of cost/benefit ratio for a public project.										5	1,3
	c) What is a pre-bid conference? Explain the need for pre-qualification of contractors for a project.										5	6

Table 1: Time value of money factors.

	Single Payment		Uniform Series			
	Compound-Amount Factor	Present-Worth Factor	Compound-Amount Factor	Sinking-Fund Factor	Present-Worth Factor	Capital-Recovery Factor
N	Convert P to F (F/P,i,N)	Convert F to P (P/F,i,N)	Convert A to F (F/A,i,N)	Convert F to A (A/F,i,N)	Convert A to P (P/A,i,N)	Convert P to A (A/P,i,N)
1	1.1000	0.9091	1.0000	1.0000	0.9091	1.1000
2	1.2100	0.8264	2.1000	0.4762	1.7355	0.5762
3	1.3310	0.7513	3.3100	0.3021	2.4869	0.4021
4	1.4641	0.6830	4.6410	0.2155	3.1699	0.3155
5	1.6105	0.6209	6.1051	0.1638	3.7908	0.2638
6	1.7716	0.5645	7.7156	0.1296	4.3553	0.2296
7	1.9487	0.5132	9.4872	0.1054	4.8684	0.2054
8	2.1436	0.4665	11.4359	0.0874	5.3349	0.1874
9	2.3579	0.4241	13.5795	0.0736	5.7590	0.1736
10	2.5937	0.3855	15.9374	0.0627	6.1446	0.1627
11	2.8531	0.3505	18.5312	0.0540	6.4951	0.1540
12	3.1384	0.3186	21.3843	0.0468	6.8137	0.1468
13	3.4523	0.2897	24.5227	0.0408	7.1034	0.1408
14	3.7975	0.2633	27.9750	0.0357	7.3667	0.1357
15	4.1772	0.2394	31.7725	0.0315	7.6061	0.1315
16	4.5950	0.2176	35.9497	0.0278	7.8237	0.1278
17	5.0545	0.1978	40.5447	0.0247	8.0216	0.1247
18	5.5599	0.1799	45.5992	0.0219	8.2014	0.1219
19	6.1159	0.1635	51.1591	0.0195	8.3649	0.1195
20	6.7275	0.1486	57.2750	0.0175	8.5136	0.1175
21	7.4002	0.1351	64.0025	0.0156	8.6487	0.1156
22	8.1403	0.1228	71.4027	0.0140	8.7715	0.1140
23	8.9543	0.1117	79.5430	0.0126	8.8832	0.1126
24	9.8497	0.1015	88.4973	0.0113	8.9847	0.1113
25	10.8347	0.0923	98.3471	0.0102	9.0770	0.1102

Figure 1: Plan and section for Question 2



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End Semester Exam
May 2022

Final year B. Tech (Civil) Sem VIII 21/5/22

Max. Marks: 100 **Duration: 3 Hrs**

Class: B. Tech **Semester: VIII**

Name of the Course: Environmental Impact Assessment **Program: Civil**

Course Code : PE BTC841

Instructions:

- **Question one is compulsory and attempt any four of remaining six questions**
- **Draw neat sketches/diagrams wherever required and wherever design is asked.**
- **Assume suitable data if necessary and state them clearly**
- Figure on right indicate **maximum points** for the given question, **course outcomes attained, Bloom's Level** and **Performance Indicators**

		Marks	CO	BL	PI
Q1	**Answer the following questions:**	**(20) (4*5)**	**1-4**	**4-6**	**4.3.1**
(a)	Explain the importance of public participation in EIA process and at which stage of EIA it is carried out				
(b)	Define air pollution. Deliberate on the methods that can be used for air quality assessment				
(c)	Compare Adhoc and checklist methods and explain their drawbacks				
(e)	Explain in short the steps and procedure for an EIA study				
(f)	How would you design an indoor air environment assessment				
(g)	Where and how Index of quantitative variation of ethnicity used?				
Q2	**Answer the following questions**	**(20)**	**1-4**	**2-4**	**3.1.2**
(a)	Fill in the blanks	**(1*5)**			
i.	The _____ refers to the original environmental conditions existing at a given moment before a change				
ii.	The _____ is the natural or juridic person or organization interested in the development of a project				
iii.	The _____ is one of the most important tools in order to incorporate an environmental point of view into the decisions to be taken by the project from the investment perspective				
iv.	SEIAA committee has _____ (number)members				
v.	The _____ category project requires full scale EIA.				

(b)	A petrochemical company has been operating for several years (more than 20 yrs) in a terrain with the following characteristics: porous, filterable with a phreatic level near to the surface (1.5 m depth). The company is located close by to an estuary branch which is quite useful for them since they discharge all the disposals and waste generated by this activity directly into the estuary. These disposals contain a high level of phenols, oils and greases. All the discharges goes directly into the soil since there are no sewers or gutters. The company operates24X7. The Municipality since the local people has complained has arranged the execution of an EIA and you are a part of it. **(i) Mention and explain three environmental impacts of this company's action** **(ii) Explain the questions that will be posed to the public in public consultation** **(iii) Mention and explain mitigation measures you will propose as part of your EMP to mitigate the impacts identified ?**	**(10)**			
(c)	Explain any 2 air pollution control devices with their working and draw suitable figures	**(05)**			
Q3	**Answer the following questions (any 4)**	**(20) (5*4)**	**1-4**	**5, 6**	**4.2.2**
(a)	Explain the matrix method				
(b)	Explain various methods of social cost benefit analysis				
(c)	Explain the parameters to be considered while assessing the indoor environment				
(d)	Explain the indicators considered in Socio economic impact assessment				
(e)	What is ecology and how it is considered in EIA process?				
Q4	**Answer the question**	**(20)**	**2-4**	**3-6**	**4.3.2**
(a)	A new airport is coming up in a city which is financially hub and which is close to sea (away from the main city) but the project will improve the connectivity globally. An environmental impact study is to be conducted and you are a part of EIA team. How would you go about designing and conducting the study. What can be the probable impacts and what would be the mitigation measures. Design Environmental management plan for the same.				
Q5	**Answer the questions**	**(20)**	**1-4**	**2-6**	**5.2.2**
	State True or false with reasoning (Reasoning to be given for both true or false)	**(10*2)**			
(i)	Specific detailed engineering design shall not be required at the EIA review stage.				
(ii)	EIA covers projects such as mining of coal or other minerals, infrastructure development, railways, metros, thermal, nuclear				

	and hydropower projects, real estate and other industrial projects.				
(iii)	SEIAA is 3 member committee.				
(iv)	An airforce airport will be considered strategic as per new EIA draft notification				
(v)	The EIA evaluation must be done after the issuance of permits and clearances.				
(vi)	A type projects require prior EC from SEIAA or UTEIAA.				
(vii)	A good quality EIA might still lead to the planned development not being permitted to go ahead based on the identified impacts.				
(viii)	The shortcoming of new EIA notification include lesser compliance reporting.				
(ix)	Mass balance and mixing zone modeling is used in air impact analysis.				
(x)	Caline 4 has a shortcoming in flat plains.				
Q6	A new national highway is to be constructed in mountainous region of Uttarakhand and an EIA is to be conducted. The main terrain is of sedimentary rocks and there are two major rivers passing by the terrain. An environmental impact study is to be conducted and you are a part of EIA team. How would you go about designing and conducting the study. What can be the probable impacts and what would be the mitigation measures. Design Environmental management plan for the same	**(20)**	**1-4**	**3-6**	**4.3.2**
Q7	A 200 MW thermal power plant is suppose to be set up near a town facing power crunch. It will be housed in an already existing steel plants which is near five villages. An initial study was conducted and it was observed there is a river flowing nearby used as a drinking water source and will have to be used to dispose effluents for power plant. The soil in the nearby area is clayey and the ground water level falls to 6 m below the GL during summer. An environmental impact study is to be conducted and you are a part of EIA team. How would you go about designing and conducting the study. What can be the probable impacts and what would be the mitigation measures. Design Environmental management plan for the same	**(20)**	**1-4**	**3-6**	**4.3.2**

ALL THE BEST

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B. Tech Civil ~~Sem~~ VIII

Re-exam
July 2022 Sem

12/7/22.

Max. Marks: 100 | **Duration: 3 Hrs**

Class: B. Tech | **Semester: VIII**

Name of the Course: Environmental Impact Assessment | **Program: Civil**

Course Code:PE BTC841

Instructions:

- **Attempt 5 questions out of 7 questions**
- **Draw neat sketches/diagrams wherever required and wherever design is asked.**
- **Assume suitable data if necessary and state them clearly**
- Figure on right indicate **maximum points** for the given question, **course outcomes attained, Bloom's Level** and **Performance Indicators**
- **All the best**

		Marks	CO	BL	PI
Q1	**Answer the following questions (any 5):**	**(20) (4*5)**	**1-4**	**4-6**	**4.3.1**
(a)	Explain the importance of public participation in EIA process				
(b)	Define noise. Explain its unit of measurement				
(c)	Enlist drawbacks of Matrix method				
(d)	Explain in short the steps in EIA study				
(e)	How would you design an indoor air environment assessment				
(f)	Where and how Index of quantitative variation of ethnicity used?				
Q2	**Answer the following questions**	**(20)**	**1-4**	**2, 6**	**5.1.2**
(a)	Fill in the blanks	**(1*5)**			
i.	The _____ refers to the original environmental conditions existing at a given moment before a change				
ii.	The _____ is the natural or juridic person or organisation interested in the development of a project				
iii.	The _____ is one of the most important tools in order to incorporate an environmental point of view into the decisions to be taken by the project from the investment perspective				
iv.	The purpose of mitigation is_____				
v.	_____identifies the issues that are likely to be of most importance during the EIA and eliminates those that are of little				

	concern				
(b)	A chemical (producing lubrication oil) a company has been operating for several years (more than 10 yr) in a terrain with the following characteristics: porous, filterable with a phreatic level near to the surface (1.5 m depth). The company is located close by to an estuary branch which is quite useful for them since they discharge all the disposals and waste generated by this activity directly into the estuary. These disposals contain a high level of oils and greases. All the discharges goes directly into the soil since there are no sewers or gutters. The lubricating company operates for 20hrs for seven days per week. The Municipality since the local people has complained has arranged the execution of an EIA and you are a part of it. **(i) Mention and explain in detail three environmental impacts of this activity** **(ii) Mention and explain three mitigation measures you will propose as part of your EMP to mitigate the impacts identified ?** **(iii) What steps are to be followed for applying for EC in this situation**	**(15)**			
Q3	**Answer the following questions**	**(20) (4*5)**	**1-4**	**5, 6**	**4.2.2**
(a)	Compare checklist and adhoc methods				
(b)	Explain social cost benefit analysis				
(c)	Explain the parameters to be considered while assessing the indoor environment				
(d)	Explain the indicators considered in Socio economic impact assessment				
Q4	**Answer the question**	**(20)**	**2-4**	**6-7**	**5.1.3**
(a)	A new airport is coming up in a city which is financially hub and which is close to sea (away from the main city) but the project will improve the connectivity globally. An environmental impact study is to be conducted and you are a part of EIA team. How would you go about designing and conducting the study. What can be the probable impacts and what would be the mitigation measures. Design Environmental management plan for the same.				
Q5	**Answer the questions**	**(20)**	**1-4**	**2-6**	**5.2.2**
(a)	**State True or false with reasoning (Reasoning to be given for both true or false)**	**(10) (2*5)**			
(i)	Specific detailed engineering design shall not be required at the EIS review stage.				
(ii)	If there is available and relevant secondary data to a development proposal, the Env. Impact review comittee should require additional primary sampling.				

(iii)	Data on natural hazards are required to be presented in the EIS.				
(iv)	Recommendation of internationally acceptable methods for quantitative assessments should be done during the Scoping stage of the EIA process				
(v)	The EIA evaluation must be done after the issuance of permits and clearances.				
(b)	A new national highway is to be constructed in mountainous region of Himachal Pradesh and an EIA is to be conducted. The main terrain is of sedimentary rocks and there are two major rivers passing by the terrain. Answer the following questions **(i)Mention and explain three environmental impacts of this activity** **(ii)Mention and explain three mitigation measures you will propose as part of your EMP to mitigate the impacts identified ?**	**(10)** **(2*5)**	**1-4**	**2-6**	**4.1.1** **7.1.1**
Q6	A new mining operation is to be carried out in Jharkhand to mine precious metals in an area which has endangered species of animals. Explain in detail the EIA that will be carried out with steps, significant impacts, mitigation measures and EMP that will be suggested by you.	**(20)**	**1-4**	**2-6**	**4.1.1** **7.1.1**
Q7	A metro shed is to be set up at Aarey colony full of trees and endangered species in Mumbai,Maharashtra and is an urban jungle. An EIA is to be carried out for the same, what are the steps, significant impacts, mitigation measures and EMP that will be suggested by you	**(20)**	**1-4**	**2-6**	**4.1.1** **7.1.1**

BharatiyaVidyaBhavan's

Sardar Patel College of Engineering

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Munshi Nagar, Andheri (West), Mumbai – 400058

Term II, Semester VIII

END SEM Examinations May 2022

final year B.Tech

19/5/22

Program: **Civil Engineering** **Duration: 3hr**

Course Code: PE-BTC853 **Maximum Points: 100**

Course Name: Valuation & Value Engineering **Semester: VIII**

Instructions:

1. **Attempt any five questions.**
2. Neat diagrams must be drawn wherever necessary.
3. Assume Suitable data if necessary and state it clearly.

Q. No.		Questions	Points	CO	BL	PI
1	a	Discuss the factors affecting valuation of a property.	6	CO2	BL2	1.4.1
	b	Check the feasibility of the project based on present worth method using i =15%	8	CO3	BL3	2.1.3
		The initial outlay= ₹ 60,00,000/-,Life of the project = 12 years Annual equivalent revenue= ₹ 18,00,000/-,Modernizing cost at the end of the 6th year = ₹ 25,00,000/-,Salvage value at the end of the life = ₹ 6,00,000/-				
	c	Define roadblocks and discuss with examples their importance in value engineering.	6	CO1	BL1	1.4.1
2	a	A company has purchased an equipment whose first cost is ₹ 1,00,000/- with an estimated life of 8 years.	9	CO3	BL2	2.2.4
		The estimated salvage value of the equipment at the end of its lifetime is ₹ 20,000/- Determine the depreciation and changes in book value at the end of 8 year by using a) Straight line method, b) Sum of the years digit methods. c) Double declining balance method				
	b	Describe in detail the factors which contribute the poor value.	8	CO2	BL5	2.1.1
	c	Explain time value of money.	3	CO2	BL1	1.4.1
3	a	A plot of land has been purchased for ₹80,000/-	8	CO2	BL4	2.2.4
		and a building has been constructed on it incurring a further expenditure of ₹ 1,20,000/- inclusive of water supply, sanitary and electrical fittings. Allowing a net return of 5% on the cost of land and 8% on the cost of construction, work out standard rent of the property. Assume future life of building as 80 years, cost of maintenance of ₹ 600/- per year. Municipal taxes and other outgoings 25% of gross rent. Annual sinking fund to be created @ 5%.				
	b	Discuss in detail various phases in value engineering job plan.	8	CO2	BL3	3.1.1

<table>
<tr><td></td><td>c</td><td>Explain process of life cycle costing in Construction.</td><td>4</td><td>CO2</td><td>BL3</td><td>2.3.1</td></tr>
<tr><td rowspan="4">4</td><td>a</td><td>Discuss belting method of valuation.</td><td>5</td><td>CO2</td><td>BL3</td><td>1.4.1</td></tr>
<tr><td>b</td><td>Spark developers is planning to replace it construction equipment.</td><td>9</td><td>CO3</td><td>BL5</td><td>2.2.4</td></tr>
<tr><td></td><td colspan="5">It has received tenders from three different original manufacturers of construction equipment. The details are as follows. Life is 12 years. Which is the best alternative based on future worth method at i=20%
<table>
<tr><td></td><td colspan="3">Manufacturer</td></tr>
<tr><td></td><td>1</td><td>2</td><td>3</td></tr>
<tr><td>Initial cost ₹</td><td>80,00,000</td><td>70,00,000</td><td>90,000,00</td></tr>
<tr><td>Annual operation & Maintenance cost₹</td><td>8,00,000</td><td>9,00,000</td><td>8,50,000</td></tr>
<tr><td>Salvage value ₹after 12 years</td><td>5,00,000</td><td>4,00,000</td><td>7,00,000</td></tr>
</table></td></tr>
<tr><td>c</td><td>Define value and discuss Aesthetic value and Ergonomic Value.</td><td>6</td><td>CO1</td><td>BL2</td><td>2.1.2</td></tr>
<tr><td rowspan="3">5</td><td>a</td><td>Explain importance of FAST diagram in value Engineering. Also draw FAST diagram for foundation of flyover construction project.</td><td>8</td><td>CO1</td><td>BL2</td><td>1.3.1</td></tr>
<tr><td>b</td><td>Hindustan construction company has 3 mutually exclusive project alternatives for expanding their</td><td>9</td><td>CO3</td><td>BL5</td><td>2.3.2</td></tr>
<tr><td></td><td colspan="5">Business. The details are as given below. Life is 10 years
<table>
<tr><td>Project</td><td>Initial cost ₹</td><td>Annual Maintenance cost ₹</td></tr>
<tr><td>A1</td><td>25,00,000</td><td>8,00,000</td></tr>
<tr><td>A2</td><td>20,00,000</td><td>6,00,000</td></tr>
<tr><td>A3</td><td>30,00,000</td><td>10,00,000</td></tr>
</table>
Each alternative has insignificant salvage value at the end of its life. Assuming an interest rate of 15% compounded annually, find the best project alternative for expanding the business operation of the company using annual equivalent method.</td></tr>
<tr><td></td><td>c</td><td>Differentiate depreciation and obsolescence.</td><td>3</td><td>CO1</td><td>BL1</td><td>1.3.1</td></tr>
<tr><td rowspan="3">6</td><td>a</td><td>Define & discuss function along with their types.</td><td>6</td><td>CO2</td><td>BL2</td><td>2.1.2</td></tr>
<tr><td>b</td><td>Discuss the importance of Value Engineering in the context of Construction Engineering.</td><td>8</td><td>CO2</td><td>BL4</td><td>1.3.1</td></tr>
<tr><td>c</td><td>Define valuation and discuss purpose of valuation.</td><td>6</td><td>CO2</td><td>BL4</td><td>1.3.1</td></tr>
<tr><td rowspan="3">7</td><td>a</td><td>List out the different rules to check the correctness of function definition.</td><td>6</td><td>CO1</td><td>BL3</td><td>3.1.2</td></tr>
<tr><td>b</td><td>State the checklist to be used during the information phase of VEJP.</td><td>6</td><td>CO1</td><td>BL1</td><td>3.2.1</td></tr>
<tr><td>c</td><td>Explain in detail the outgoings during possession and maintenance of a property.</td><td>8</td><td>CO2</td><td>BL2</td><td>1.3.1</td></tr>
</table>

Bharatiya Vidya Bhavan's

Sardar Patel College of Engineering

(A Government Aided Autonomous Institute)

Munshi Nagar, Andheri (West), Mumbai – 400058

B. Tech (Civil) Sem VIII

Re-Examinations July 2022

Program: Civil Engineering **Duration: 3hr**

Course Code: PE-BTC853 **Maximum Points: 100**

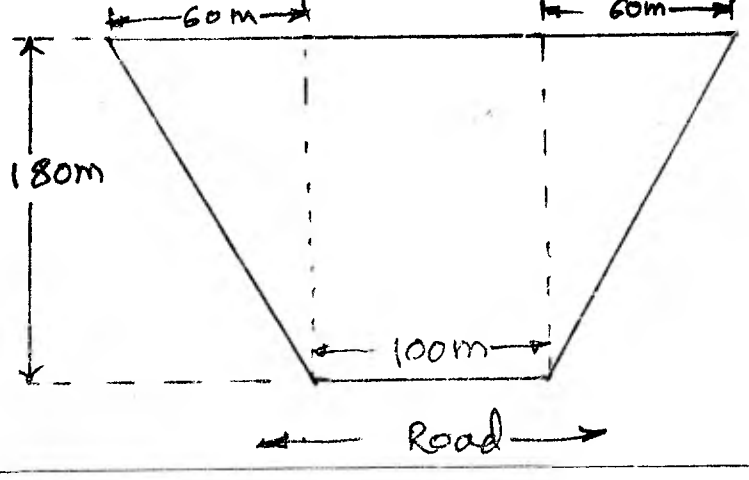
Course Name: Valuation & Value Engineering **Semester: VIII**

11/7/22

Instructions:

1. **Attempt any five questions.**
2. Neat diagrams must be drawn wherever necessary.
3. Assume Suitable data if necessary and state it clearly.

Q. No.		Questions	Points	CO	BL	PI
1	a	Discuss the factors affecting valuation of a property.	6	CO2	BL2	1.4.1
	b	Check the feasibility of the project based on present worth method using i =15%	8	CO3	BL3	2.1.3
		The initial outlay= ₹ 70,00,000/-,Life of the project = 12 years Annual equivalent revenue= ₹ 20,00,000/-,Modernizing cost at the end of the 6th year = ₹ 25,00,000/-,Salvage value at the end of the life = ₹ 6,00,000/-				
	c	Define valuation and discuss purpose of valuation.	8	CO1	BL1	1.3.3
2	a	A temporary shed has been constructed for Rs. 12,000/-. Assuming its salvage value at the end of 6 years as Rs. 3000/-, determine the amount of depreciation and book value for each year by a) Straight line method, b) Sum of the years digit methods. c) Double declining balance method	9	CO3	BL2	2.2.4
	b	Discuss in detail various phases in value engineering job plan.	8	CO2	BL3	3.1.1
	c	Explain time value of money.	3	CO2	BL1	1.4.1
3	a	Describe in detail the factors which contribute the poor value.	8	CO2	BL5	2.1.1
	b	Define value and discuss Sell value and Esteem Value.	6	CO1	BL2	2.1.2
	c	Define valuation and discuss purpose of valuation.	6	CO2	BL4	1.3.1
4	a	Define & discuss function along with their types.	6	CO2	BL2	2.1.2
	b	A building is situated by the side of main road in the city on a land lot of 500sq m. The built up portion is 20m X 15m. The building is first class type and is provided with water supply, sanitary and electric fittings. The age of the building is 30 Years. Work out the valuation of the property. Assume plinth	8	CO3	BL5	2.2.4

		area rate at the time of construction to be 3500/- per sq.m. and the life of the building is 100 years. Take cost of land to be Rs. 2500/- per sq.m.				
	c	State the checklist to be used during the speculation phase of VEJP.	6	CO1	BL1	3.2.1
5	a	Explain importance of FAST diagram in value Engineering. Also draw FAST diagram for brickwork in construction project.	6	CO1	BL2	1.3.1
	b	L&T construction company has 3 mutually exclusive project alternatives for expanding their	9	CO3	BL5	2.3.2
		Business. The details are as given below. Life is 10 years Project | Initial cost ₹ | Annual Maintenance cost ₹ A1 | 35,00,000 | 9,00,000 A2 | 20,00,000 | 7,00,000 A3 | 30,00,000 | 11,00,000 Each alternative has insignificant salvage value at the end of its life. Assuming an interest rate of 20% compounded annually, find the best project alternative for expanding the business operation of the company using annual equivalent method.				
	c	Differentiate Market value and book value.	5	CO1	BL1	1.3.1
6	a	It is proposed to apply Value Engineering in the context of Bridge Construction Project. Discuss procedure to apply value engineering.	8	CO2	BL4	1.3.1
	b	Discuss importance of depreciation in the context of valuation of building and construction equipment.	6	CO1	BL2	1.3.1
	c	List out the different rules to check the correctness of function definition.	6	CO1	BL3	3.1.2
7	a	Discuss salvage value, scrap value, sentimental value and replacement value.	8	CO1	BL1	1.3.1
	b	Discuss life cycle cost analysis (LCCA) of a high rise building	4	CO3	BL2	1.4.1
	c	If the width of the first belt is 60 m and its value is estimated as 1200 per sq. m.	8	CO1	BL1	1.3.1
		Find the value of the entire plot by belting method of valuation of a land.  				

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SARDAR PATEL COLLEGE OF ENGINEERING

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Munshi Nagar, Andheri (W) Mumbai – 400058

final year B. Tech (Civil) Sem VIII

END SEMESTER EXAMINATION- MAY 2022

Program: Civil Engineering **Duration:3 hr.** 19/5/22

Course Code: PE-BTC-842 **Maximum Points: 100**

Course Name: Environmental Law & Policy **Semester: VIII**

Notes:

1. **Q.1 is question compulsory & solve any four out of remaining six**
2. **Illustrate answer with neat sketches wherever required.**
3. **Make suitable assumptions where necessary and state them clearly.**

Q.No.	Questions	Marks	BL	CO	PO	PI Code
1.	**Solve any two :** 1. Constitutional Provisions referred to frame Environmental Laws in India. 2. Cartagena Protocol. 3. EPA 1986. 4. Sources or principles of environmental law.	20	1	1,2	1,6,7	1.3.1
2	1. Explain in detail. Almost the entire global population. or 99 per cent, breathes air that exceeds air quality limits set by the World Health Organization (WHO), the UN health agency said in a statement. Explain how Government of India responding to above situation through air (prevention & control of pollution) act, 1981. 2. Forest conservation act, 1980 bring significant changes in forest governance of India. Support above statement.	20	2	1,3	1,6,7	1.3.1
3	1. The Centre has notified the Plastic Waste Management Amendment Rules, 2021, prohibiting the manufacture, import, stocking, distribution, sale and use of several single-use plastic items from July 1, 2022.Explain others provisions in Plastic waste management rules, 2016 to tackle single or multi use plastic items. 2. 'E-waste disposal, a mounting headache for the city' Explain how E- waste management rules, 2016 helps to reduce down e-waste problems in cities.	20	2	1,2	1,6,7	1.3.1/ 2.1.3
4	1. As the number of Covid-19 cases continue to show a downward trend, the Centre has revoked the provisions of the Disaster Management Act 2005 for Covid containment measures. Explain old provisions need to be revoked in Disaster management Act, 2005 in detail.	20	2	1,2	1,6,7	1.3.1

	2. Thirty years after the Rio Summit the green report card is not fully in the red. Explain how developing country like India is trying to maintain balance between economic and sustainable development through Bio-Diversity Act-2002.					
5	1. Report filed by the Tamil Nadu Pollution Control Board to the NGT regarding a fish processing unit in a prohibited area, Painkulam village, Kanyakumari district, Tamil Nadu . Explain how CRZ Rules help to maintain ecological balance in coastal areas in India. 2. Explain C & D waste management rules, 2016 in detail.	20	2	1,2,3	1,6,7	1.3.1/ 2.1.3
6	1. Ramsar Convention for wetland conservation. 2. Kyoto protocol & Montreal Protocol	20	2	1,2,3	1.6.7	1.3.1/ 2.1.3
7	1. Explain Bio-medical waste management rules, 2016 in detail. 2. Explain Atomic energy act, 1962 in detail.	20	2	1,2	1,6,7	1.3.1/ 2.1.3

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23/5/22

End Semester Examinations MAY 2022

(2021-22)

Program: T.Y. Sem.VI and B. TECH. Sem. VIII **Duration: 03 Hrs.**

Course Code: OE-BTC-611/812 **Maximum Points: 100**

Course Name: HUMAN RESOURCES DEVELOPMENT AND ORGANIZATIONAL BEHAVIOR (HRDOB)

Semester: VI/VIII (Civil/Mechanical/Electrical)

Notes:

- Attempt ***any five*** questions.
- Answer to all sub questions should be grouped together.
- **Figure** to right indicates full marks.
- Assume suitable data wherever necessary and state it **clearly**.

Q. No.	Questions	Points	CO	BL	PI
1	(a)Discuss: importance of effective organization, organization culture and explain how to make staff more effective at workplace.	10	1	1	6.1.1
	(b)Explain: McGregor's Theory 'X' and Theory 'Y' and assumptions about nature of people. How this will help leaders to develop an organization? Discuss.	10	1	1	6.1.1
2	(a)Discuss the Role of HR in an organization development. Also explain challenges of human resource development.	10	2	2	10.2.1
	(b)How HRD process helps people to acquire competencies in an organization? Explain.	10	2	3	10.2.1
3	(a)What is the need for organizational learning? Highlight its importance in organizational development.	10	1	2	12.1.2
	(b) Explain training and HRD process model and comment on effective training design in HR development process.	10	2	3	11.3.2
4	(a)What is employee counselling? Why it is required? State its importance with an example and state its benefits.	10	2	4	12.2.2
	(b)What is competency mapping? Explain its need in competency identification process.	10	2	4	12.1.1

(P.T.O.)

End Semester Examinations MAY 2022

(2021-22)

5	(a)Differentiate between career development and career management. Explain skills required in future career and job retention drivers.	10	2	4	12.1.1
	(b) What is diversity at workplace? How diversity matters? What kind of role HR can play in the process to manage it?	10	2	4	12.1.1
6	(a)Discuss HR ethics and its need at workplace.	10	2	2	8.1.1
	(b) What do you mean by organizational behavior? State Important characteristics of organizational behavior.	10	2	5	8.2.2
7	(a)Explain major contributing disciplines to the field of organizational behavior.	10	2	4	8.1.1
	(b)What is a work team? What makes workplace teams effective? Highlight issues of emotions and stress at workplace.	10	2	1	9.1.1

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(P.T.O.)

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23/5/22

END SEM Examinations May 2022

Program: Civil/Mech/Elect Engineering **Duration: 3hr**

Course Code: (OE-BTC 613 & OE-BTC 813) **Maximum Points: 100**

Course Name: Watershed Development & Management **Semester: VI/VIII**

Instructions:

1. **Attempt any five questions.**
2. Neat diagrams must be drawn wherever necessary.
3. Assume Suitable data if necessary and state it clearly.

Q. No.		Questions	Points	CO	BL	PI
1	a	What are the causes of watershed deterioration? Explain in detail.	6	CO2	BL2	1.4.1
	b	A watershed has following data as given below	6	CO2	BL3	2.1.3
		Area of watershed= 9km², Distance between the outlet & further most point=10km, Total length of channel of various order=450km, Elevation difference between outlet and further most point = 670m, Find drainage density, form factor, channel slope and average overland flow length.				
	c	Explain in detail factors affecting runoff in a watershed.	8	CO1	BL1	1.4.1
2	a	Discuss components of watershed management programme along with its significance.	6	CO2	BL2	2.1.1
	b	Explain the factors affecting infiltration in a watershed.	6	CO1	BL2	2.1.1
	c	Explain in detail urban recharge structure for RTRWH.	8	CO2	BL3	1.4.1
3	a	State the characteristics of watershed along with their importance regarding watershed management.	6	CO1	BL2	2.2.4
	b	Explain in detail types of soil erosion in a watershed	10	CO1	BL3	2.1.1
	c	Brief about RWH dam constructed at Una in Himachal Pradhesh.	4	CO1	BL3	2.1.1
4	a	Calculate the availability of water in Roof Top RWH system for a group of 4 family members.	6	CO2	BL3	1.4.1
		Size of roof is 12 m X10 m, with average annual rainfall is 1000 mm and runoff coefficient is 0.8. Also calculate availability of water for number of days along with its %. Daily consumption of water is 120lits/capita/day.				
	b	Discuss in detail the process of wind erosion in a watershed.	8	CO1	BL2	1.4.1
	c	Classify bench terraces as per slope and also draw neat labelled diagram.	6	CO1	BL1	2.1.2

5	a	Discuss the watershed development component of PMKSY along with the objectives of PMKSY.	6	CO1	BL1	2.1.2
	b	Discuss in depth the factors affecting soil erosion in a watershed.	6	CO1	BL2	2.3.2
	c	Discuss about issues faced by people of Hiware Bazar prior to watershed development.	8	CO1	BL1	1.3.1
6	a	Draw neat labeled diagram of first flush lock and sand bed filter.	6	CO2	BL2	2.1.2
	b	What are the salient features of integrated watershed management Program?	8	CO2	BL4	1.3.1
	c	Discuss the criteria for site selection of check dam and also discuss design criteria of a check dam.	6	CO2	BL4	1.3.1
7	a	What are the roles and responsibilities of Watershed development team (WDT)?	6	CO2	BL2	3.1.2
	b	Discuss in detail the process of wind erosion in a watershed.	6	CO1	BL1	2.3.2
	c	You have been assigned as a responsibility for the development of a particular watershed, discuss about the data required for the watershed development project.	8	CO2	BL4	3.1.2