



**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR  
(AUTONOMOUS)**

Siddharth Nagar, Narayanavanam Road – 517583

**QUESTION BANK (DESCRIPTIVE)**

**Subject with Code:** Basic Civil & Mechanical Engineering (23CE0101)

**Course & Branch:** B.Tech – 1<sup>st</sup> Year

**Year & Sem:** I B.Tech & I Sem

**Regulation:** R23

**UNIT –I  
BASICS OF CIVIL ENGINEERING**

1	a) What are the interdisciplinary concepts in civil engineering?	[L1][CO1]	[2M]
	b) What are different forms of steel?	[L1][CO1]	[2M]
	c) What is meant by surveying?	[L1][CO1]	[2M]
	d) What do you mean by reinforced concrete?	[L1][CO1]	[2M]
	e) List out various sources of water?	[L1][CO1]	[2M]
2	a) Describe briefly about Structural Engineering.	[L2][CO1]	[5M]
	b) Write a detailed report on Building Construction.	[L1][CO1]	[5M]
3	a) Explain in detail about Geotechnical Engineering.	[L2][CO1]	[5M]
	b) Describe about Transportation Engineering.	[L2][CO1]	[5M]
4	a) Describe about Hydraulic Engineering.	[L2][CO1]	[5M]
	b) Explain in detail about Irrigation & Water Resource Engineering.	[L2][CO1]	[5M]
5	a) Write about good qualities of cement.	[L1][CO1]	[5M]
	b) List out grades of cement and their uses.	[L1][CO1]	[5M]
6	Write briefly about classification of aggregates?	[L1][CO1]	[10M]
7	a) Explain the classification, qualities and constituents of a brick.	[L2][CO1]	[5M]
	b) List out various uses of bricks in construction.	[L1][CO1]	[5M]
8	a) What is cement concrete and what are the properties of cement concrete?	[L1][CO1]	[5M]
	b) List out various uses of cement concrete?	[L2][CO1]	[5M]
9	a) List out various forms of steel used in construction. Explain briefly.	[L2][CO1]	[5M]
	b) Which steel channel sections available in the market? Give neat sketches on it.	[L1][CO1]	[5M]
10	a) What are the advantages and disadvantages of prefabrication techniques?	[L1][CO1]	[6M]
	b) Write about principles of prefabrication techniques.	[L1][CO1]	[4M]



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**UNIT –II  
SURVEYING**

1	a) Differentiate between true meridian and magnetic meridian.	[L2][CO2]	[2M]																																																
	b) What is meant by traversing?	[L1][CO2]	[2M]																																																
	c) Define Benchmark.	[L2][CO2]	[2M]																																																
	d) Mention the types of levelling staff.	[L1][CO2]	[2M]																																																
	e) What are the uses of contour mapping?	[L1][CO2]	[2M]																																																
2	a) Define surveying. Mention the objectives of surveying	[L2][CO2]	[6M]																																																
	b) What are the uses of surveying?	[L1][CO2]	[4M]																																																
3	Briefly explain the various methods of horizontal measurement?	[L2][CO2]	[10M]																																																
4	a) Mention the various accessories in chain surveying and explain any two in detail?	[L1][CO2]	[5M]																																																
	b) Convert Whole Circle Bearing (WCB) into Reduced Bearing (RB) i) 20°30'      ii) 132°30'      iii) 256°00'      iv) 345°0'	[L3][CO2]	[5M]																																																
5	a) Convert Reduced Bearing (RB) into Whole Circle Bearing (WCB) i) N75°35'E      ii) S39°20'W      iii) S42°40'E      iv) N59°55'W	[L3][CO2]	[5M]																																																
	b) Calculate the back bearing from observed fore bearing for the following lines i) AB=55°34'      ii) CD=159°53' iii) PQ=210°12'      iv) RS=295°36'	[L3][CO2]	[5M]																																																
6	The bearing of the sides of a closed traverse ABCD are given below. Find the included angle of the given traverse. <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Line</th> <th>Fore Bearing</th> <th>Back Bearing</th> </tr> </thead> <tbody> <tr> <td>AB</td> <td>40°</td> <td>220°</td> </tr> <tr> <td>BC</td> <td>70°</td> <td>250°</td> </tr> <tr> <td>CD</td> <td>210°</td> <td>30°</td> </tr> <tr> <td>DA</td> <td>280°</td> <td>100°</td> </tr> </tbody> </table>	Line	Fore Bearing	Back Bearing	AB	40°	220°	BC	70°	250°	CD	210°	30°	DA	280°	100°	[L3][CO2]	[10M]																																	
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7	Explain briefly the various types of levelling instruments.	[L2][CO2]	[10M]																																																
8	The readings are entered in the page of level field book as shown below. Reduce the level by height of collimation method. The R.L. of the B.M.1 is given as 200.000m. Apply the check. <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Station</th> <th>BS</th> <th>IS</th> <th>FS</th> <th>RL</th> <th>Remarks</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>1.430</td> <td></td> <td></td> <td>200.000</td> <td>BM.1</td> </tr> <tr> <td>2</td> <td></td> <td>2.015</td> <td></td> <td></td> <td></td> </tr> <tr> <td>3</td> <td></td> <td>1.005</td> <td></td> <td></td> <td></td> </tr> <tr> <td>4</td> <td>3.370</td> <td></td> <td>0.400</td> <td></td> <td>C.P.1</td> </tr> <tr> <td>5</td> <td></td> <td>2.975</td> <td></td> <td></td> <td></td> </tr> <tr> <td>6</td> <td></td> <td>1.415</td> <td></td> <td></td> <td></td> </tr> <tr> <td>7</td> <td></td> <td></td> <td>0.695</td> <td></td> <td>B.M.2</td> </tr> </tbody> </table>	Station	BS	IS	FS	RL	Remarks	1	1.430			200.000	BM.1	2		2.015				3		1.005				4	3.370		0.400		C.P.1	5		2.975				6		1.415				7			0.695		B.M.2	[L3][CO2]	[10M]
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**UNIT –III  
TRANSPORTATION ENGINEERING AND  
WATER RESOURCES & ENVIRONMENTAL ENGINEERING**

1	a) State the functions of Air Transport.	[L1][CO3]	[2M]
	b) Elucidate purpose of ballast in permanent way.	[L2][CO3]	[2M]
	c) What are the reasons to build a tunnel?	[L1][CO3]	[2M]
	d) Enumerate different stages of Hydrological cycle.	[L1][CO3]	[2M]
	e) How impurities in water are classified?	[L2][CO3]	[2M]
2	Explain briefly about Flexible and Rigid Pavements with neat sketches.	[L2][CO3]	[10M]
3	a) Briefly discuss about different types of Harbour.	[L2][CO3]	[6M]
	b) What are the functions of Water Transport.	[L1][CO3]	[4M]
4	Sketch a typical cross section of permanent way and briefly explain its components.	[L2][CO3]	[10M]
5	Draw a Layout of an Airport and briefly explain about components of an airport.	[L1][CO3]	[10M]
6	a) What are the purposes for constructing a dam?	[L1][CO3]	[5M]
	b) Explain briefly about how dams are classified according to material use.	[L2][CO3]	[5M]
7	What are the various sources of water used in water supply schemes?	[L1][CO3]	[10M]
8	a) Write a short note on Hydrology.	[L1][CO3]	[5M]
	b) What do you mean by Rainwater harvesting? and write its advantages.	[L1][CO3]	[5M]
9	Briefly discuss about quality of water. What are the important requirements of water for domestic use?	[L2][CO3]	[10M]
10	Sketch a cross section of Storage Reservoir and briefly explain about different types of Reservoirs.	[L2][CO3]	[10M]

**PREPARED BY  
DEPARTMENT OF CIVIL ENGINEERING**



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**UNIT –I ( Introduction to Mechanical Engineering)**

<b>1</b>		<b>Answer All the Following Questions</b> 1. Define Strength & Brittleness of a material 2. List out the factors affect the conductivity of the metals 3. How do you classify the metals? 4. What are smart materials and mention examples 5. Write the applications of composite materials?	[L1]	[CO1]	[12M]
<b>2</b>		Illustrate the role of Mechanical Engineering in Industries and society.	[L2]	[CO1]	[12M]
<b>3</b>		Discuss about various advanced technologies in Automotive, Aerospace and marine sectors.	[L2]	[CO1]	[12M]
<b>4</b>		Explain about various essential mechanical properties for the materials.	[L2]	[CO1]	[12M]
<b>5</b>	a)	Draw the flow chart classifying engineering materials.	[L4]	[CO1]	[6M]
	b)	Differentiate between metals and Nonmetals.	[L4]	[CO1]	[6M]
<b>6</b>	a)	List out various properties of the metals.	[L1]	[CO1]	[6M]
	b)	Distinguish between ferrous and Nonferrous materials	[L4]	[CO1]	[6M]
<b>7</b>	a)	List out various properties of Ceramic materials.	[L1]	[CO1]	[6M]
	b)	Elucidate the ceramic .applications.	[L2]	[CO1]	[6M]
<b>8</b>		What is composite? How do you classify the composites? Explain in detail	[L2]	[CO1]	[12M]
<b>9</b>	a)	The most preferable material for the Automotive Industry is Composites. Justify	[L5]	[CO1]	[6M]
	b)	Identify numerous applications of Composites.	[L3]	[CO1]	[6M]
<b>10</b>		Name the types of smart materials and explain them.	[L2]	[CO1]	[12M]
<b>11</b>	a)	List out various important applications of smart materials.	[L1]	[CO1]	[6M]
	b)	Discuss about the important properties of Nonferrous metals	[L2]	[CO1]	[6M]

**UNIT –II ( Manufacturing Process & Thermal Engineering)**

<b>1</b>		<b>Answer All the Following Questions</b> 1. Name the steps involved in making a casting process 2. What are the factors on which machining depends? 3. List out the functions of additive manufacturing.	[L1]	[CO2]	[12M]
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		4. How do you classify the heat engines? 5. What is Hybrid Electric vehicle?			
2		Explain the working principle of casting with a neat sketch. And also mention its applications.	[L2]	[CO2]	[12M]
3	a)	How do you classify the forming process and explain them.	[L2]	[CO2]	[6M]
	b)	Mention the merits and demerits of forming process	[L2]	[CO2]	[6M]
4		Elucidate various joining processes along with its merits and demerits	[L2]	[CO2]	[12M]
5		Discuss the functions of various elements of CNC machine with a neat sketch. Also mention its advantages and disadvantages.	[L2]	[CO2]	[12M]
6	a)	Illustrate the functions of Additive manufacturing.	[L2]	[CO2]	[6M]
	b)	Differentiate between traditional Manufacturing and smart manufacturing	[L2]	[CO2]	[6M]
7	a)	Distinguish between fire tube boiler and water tube boiler	[L2]	[CO2]	[6M]
	b)	How do you classify the IC Engines?	[L1]	[CO2]	[6M]
8	a)	Describe the working of Two stroke Petrol Engine with a neat sketch	[L2]	[CO2]	[6M]
	b)	Draw the P-V diagram of Otto Cycle and explain.	[L4]	[CO2]	[6M]
9	a)	Illustrate the working of Four stroke diesel engine with a neat sketch	[L2]	[CO2]	[6M]
	b)	Differentiate between two stroke engine and four stroke engine	[L2]	[CO2]	[6M]
10	a)	Explain the working of simple vapour compression refrigeration system with a neat figure.	[L2]	[CO2]	[12M]
	b)	Distinguish between SI engines and CI engines	[L2]	[CO2]	[6M]
11	a)	Describe the functions of various components used in Electric vehicles	[L2]	[CO2]	[6M]
	b)	List out various merits and demerits of Hybrid vehicles.	[L1]	[CO2]	[6M]

### UNIT –III ( Power Plants & Robotics)

1		<b>Answer All the Following Questions</b> 1. How do you classify the power plants? 2. What is the function of Engine cooling system? 3. Define the nuclear fission process with an example. 4. List out the basic components of Robot. 5. Mention the merits of Gear drive over other drives.	[L1]	[CO3]	[12M]
2		Illustrate the working of steam power plant with a neat sketch.	[L2]	[CO3]	[6M]
3		Draw the layout of Diesel power plant and explain.	[L2]	[CO3]	[10M]
4		Sketch the general layout of hydroelectric power plant and brief it. Also mention its advantages and disadvantages.	[L2]	[CO3]	[6M]
5		Describe the nuclear chain reaction process.	[L3]	[CO3]	[6M]
		Explain the working principle and layout of Nuclear power plant.	[L2]	[CO3]	[6M]

<b>6</b>		How do you Classify various mechanical power transmission systems? Explain them.	[L2]	[CO3]	[12M]
<b>7</b>	<b>a)</b>	Differentiate between Belt drives, chain drives and gear drives.	[L2]	[CO3]	[6M]
	<b>b)</b>	What is the need of Robots in Industry?	[L1]	[CO3]	[6M]
<b>8</b>	<b>a)</b>	Describe in detail about Robot Anatomy.	[L4]	[CO3]	[12M]
	<b>b)</b>	Explain various types of joints used in Robots.	[L2]	[CO3]	[6M]
<b>9</b>	<b>a)</b>	Explain in brief about Asimov's laws of Robotics	[L1]	[CO3]	[6M]
	<b>b)</b>	List out various merits and demerits of Robots in detail.	[L1]	[CO3]	[6M]
<b>10</b>		Classify the robots based on Robot Configurations and explain its working.	[L1]	[CO3]	[12M]
<b>11</b>	<b>a)</b>	Robots are superior to human. Justify	[L5]	[CO3]	[6M]
	<b>b)</b>	List out various applications of robots in detail	[L1]	[CO3]	[6M]