

**MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE**

(UGC-AUTONOMOUS)

**B.Tech IV Year II Semester (R18) Regular & Supplementary End Semester Examinations,  
May – 2023****SOIL RETAINING WALLS**

(Civil Engineering)

Time: 3Hrs

Max Marks: 60

Attempt all the questions. All parts of the question must be answered in one place only.  
All parts of Q.no 1 are compulsory. In Q.no 2 to 6 answer either A or B only

Q.No	Question	Marks	CO	BL
Q.1	i. Define Earth Pressure	1M	1	1
	ii. Mention the type of wall	1M	1	2
	iii. Write the formula for atrest condition of retaining wall	1M	2	1
	iv. Define active pressure	1M	2	1
	v. How much is angle of failure pane in passive earth pressure case	1M	3	1
	vi. Write any two assumptions of Rankin's earth pressure theory	1M	3	1
	vii. Draw the sheet pile diagram	1M	4	1
	viii. Types of geo-synthetics	1M	4	1
	ix. What are the functions of earth retaining walls	1M	5	1
	x. Mention the use og Geo Membrane	1M	5	2
Q.2(A)	A gravity retaining wall retains 12 m of a backfill, $\gamma = 17.7 \text{ KN/m}^3$ $\phi = 25^\circ$ with a uniform horizontal surface. Assume the wall interface to be vertical, determine the magnitude and point of application of the total active pressure. Evaluate how far do the magnitude and the point of application of active pressure changed, If the water table is a height of 6 m?	10M	1	3
	OR			
Q.2(B)	Explain different types of retaining walls with neat sketches and write about its purpose	10M	1	2
Q.3(A)	Compile Rankine's theory of earth pressure and Coulomb's earth pressure theory, How to check the stability of cantilever retaining walls	10M	2	3
	OR			
Q.3(B)	Discuss about Retaining Wall Drainage and What Is It and Why Does It Matter? With neat sketches.	10M	2	5
Q.4(A)	Explain the different types of retaining walls and discuss with near sketches	10M	3	3
	OR			
Q.4(B)	What are the forces acting on the sheet piles and explain with neat sketches	10M	3	3
Q.5(A)	Discuss various functions of Geo-synthetics	10M	4	5
	OR			
Q.5(B)	Discuss about the uses of Geo composites and its functions	10M	4	5
Q.6(A)	What are the component parts of earth retaining structure and Explain the working mechanism of reinforced earth wall.	10M	5	3
	OR			
Q.6(B)	Explain about design considerations of earth retaining structure	10M	5	5

\*\*\* END\*\*\*

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**B.Tech IV Year II Semester (R18) Regular & Supplementary End Semester Examinations,**  
**May- 2023**

**PORT ENGINEERING**

(Civil Engineering)

Time: 3Hrs

Max Marks: 60

Attempt all the questions. All parts of the question must be answered in one place only.  
All parts of Q.no 1 are compulsory. In Q.no 2 to 6 answer either A or B only

Q.No	Question	Marks	CO	BL
Q.1	i. Define Aerodrome.	1M	1	1
	ii. What do you mean by de-icing of airplane?	1M	1	1
	iii. What do you mean by actual runway length?	1M	2	1
	iv. What is the formula for airport reference temperature?	1M	2	1
	v. Which is the world's largest airport terminal?	1M	3	1
	vi. What is a satellite terminal?	1M	3	1
	vii. What do you mean by a port?	1M	4	1
	viii. What do you mean by dredging?	1M	4	1
	ix. Define breakwater.	1M	5	1
	x. What is a wet dock?	1M	5	1
Q.2(A)	What are the elements of an airport? Explain them in detail.	10M	1	2
<b>OR</b>				
Q.2(B)	Write a short note on the history and development of air transport in India.	10M	1	2
Q.3(A)	What are the factors affecting the airport operating capacity?	10M	2	2
<b>OR</b>				
Q.3(B)	What are the elements of geometric design of a runway? Explain them in brief.	10M	2	2
Q.4(A)	Explain in details the considerations taken into account for planning a terminal building.	10M	3	3
<b>OR</b>				
Q.4(B)	What are the functions of a terminal building? Write in details.	10M	3	2
Q.5(A)	What are the requirements of a commercial harbour? Write in details.	10M	4	3
<b>OR</b>				
Q.5(B)	What do you mean by dock? What are the functions of dockyard?	10M	4	2
Q.6(A)	Write a short note on sea walls. Why are they constructed?	10M	5	2
<b>OR</b>				
Q.6(B)	Write a short note on breakwater. Why is breakwater needed-explain.?	10M	5	2

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**MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE**  
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B.Tech IV Year II Semester (R18) Regular & Supplementary End Semester Examinations – May 2023

**POWER QUALITY**  
(EEE)

Time: 3Hrs

Max Marks: 60

Attempt all the questions. All parts of the question must be answered in one place only.  
All parts of Q.no 1 are compulsory. In Q.no 2 to 6 answer either A or B only

Q.No	Question	Marks	CO	BL
Q.1	i. Define Voltage sag.	1M	1	1
	ii. Illustrate about Notching in Power Quality.	1M	1	1
	iii. What are the types of non-linear loads?	1M	2	1
	iv. Define Balanced three phase system.	1M	2	1
	v. Write the equation of instantaneous symmetrical components.	1M	3	1
	vi. Write the expression for Total Harmonic Distortion (THD).	1M	3	1
	vii. What are the types of control modes in DSTATCOM?	1M	4	1
	viii. Write about shunt compensation.	1M	4	1
	ix. Define UPQC	1M	5	1
	x. Write any two objectives of DVR.	1M	5	1
Q.2(A)	Explain the following terms: (i) Voltage swell (ii) Voltage interruption (iii) Voltage sags (iv) Sag with harmonics. <b>OR</b>	10M	1	2
Q.2(B)	Write short notes on following Power Quality problems: i) Poor Load power factor ii) DC offset in loads	10M	1	2
Q.3(A)	Explain briefly about various types of Converter-based Non-linear loads <b>OR</b>	10M	2	2
Q.3(B)	Distinguish between types non-solid-state and solid-state devices of Non-linear loads.	10M	2	2
Q.4(A)	Explain the voltage regulation and load compensation performed by DSTATCOM <b>OR</b>	10M	3	2
Q.4(B)	Explain in detail harmonic reduction in distribution system.	10M	3	3
Q.5(A)	Write in detail about the generation of reference currents using instantaneous PQ theory. <b>OR</b>	10M	4	2
Q.5(B)	Explain the structure of DSTSCOM and explain its operating principle	10M	4	2
Q.6(A)	Explain the DVR connection for voltage sag correction of sensitive loads. <b>OR</b>	10M	5	2
Q.6(B)	Explain the voltage restoration in distribution system using DVR.	10M	5	2

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**MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE**

(UGC-AUTONOMOUS)

B.Tech IV Year II Semester (R18) Regular &amp; Supplementary End Semester Examinations – May 2023

**SMART POWER GRID**

(EEE)

Time: 3Hrs

Max Marks: 60

Attempt all the questions. All parts of the question must be answered in one place only.

All parts of Q.no 1 are compulsory. In Q.no 2 to 6 answer either A or B only

Q.No	Question	Marks	CO	BL
Q.1	i. What are the Five Key Aspects of Smart Grid?	1M	1	1
	ii. Mention Need of Smart Grid.	1M	1	1
	iii. Define Real Time Pricing.	1M	2	1
	iv. What are the applications of Smart Sensors?	1M	2	1
	v. What is Phase Measurement unit?	1M	3	1
	vi. Define BESS.	1M	3	1
	vii. List any Four Properties of Islanded Non-Isolated micro grid.	1M	4	1
	viii. What is the use of Variable Speed wind generator?	1M	4	1
	ix. Why we use cloud computing technique in smart grid?	1M	5	1
	x. Define Power Quality.	1M	5	1
Q.2(A)	Explain the functions of smart grid components.	10M	1	3
<b>OR</b>				
Q.2(B)	Briefly explain the Challenges of Smart Grid Technology and also Discuss International Policies in smart Grid.	10M	1	2
Q.3(A)	Write a short on Smart substation.	10M	2	2
<b>OR</b>				
Q.3(B)	Discuss the use of Outage management system with relevant diagram.	10M	2	2
Q.4(A)	Explain how the reliability of smart grid can be enhanced by integrating Geographic Information system (GIS) into it.	10M	3	3
<b>OR</b>				
Q.4(B)	Explain the necessity of Wide Area Measurement system.	10M	3	3
Q.5(A)	With a neat sketch, explain about captive power plants.	10M	4	2
<b>OR</b>				
Q.5(B)	Compare Micro-grid with Smart grid.	10M	4	3
Q.6(A)	Discuss the Security of Smart power grid systems and cyber-attacks.	10M	5	2
<b>OR</b>				
Q.6(B)	Explain about Power Quality Audit and its applications.	10M	5	3

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**MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE**  
(UGC-AUTONOMOUS)

**B.Tech IV Year II Semester (R18) Regular & Supplementary End Semester Examinations,**  
**May – 2023**

**ENTREPRENEURSHIP AND PROJECT MANAGEMENT**

(Mechanical Engineering)

Time: 3Hrs

Max Marks: 60

Attempt all the questions. All parts of the question must be answered in one place only.  
All parts of Q.no 1 are compulsory. In Q.no 2 to 6 answer either A or B only

Q.No	Question	Marks	CO	BL
Q.1	i. List out the characteristic of Entrepreneur.	1M	1	1
	ii. What are the skills of entrepreneur?	1M	1	1
	iii. Write in brief precautions regarding product selection.	1M	2	1
	iv. Give the importance of capital budgeting.	1M	2	1
	v. What is Market survey?	1M	3	1
	vi. What do you mean by sick unit.	1M	3	1
	vii. What are the different types of plant layouts?	1M	4	1
	viii. How can a case study help identify potential challenges and opportunities in selecting a site and designing a plant layout?	1M	4	1
	ix. How can material handling equipment be used to improve productivity and reduce the risk of injury in the workplace?	1M	5	1
	x. What is the purpose of monitoring and control in a project management context?	1M	5	1
Q.2(A)	“Small scale business units are the key to industrial success of an economy”- Elucidate.	10M	1	3
	<b>OR</b>			
Q.2(B)	Discuss about women entrepreneurship and its emergence.	10M	1	3
Q.3(A)	Explain the process of idea generation. Also discuss the transformation of ideas into opportunities.	10M	2	3
	<b>OR</b>			
Q.3(B)	Discuss various formalities to start a new business	10M	2	3
Q.4(A)	Discuss record keeping, recruitment, motivating and leading teams with suitable examples.	10M	3	3
	<b>OR</b>			
Q.4(B)	Give one case study about entrepreneur who got succeeded in their business based on the financial control.	10M	3	3
Q.5(A)	How can a business owner determine the most suitable plant layout for their business in entrepreneurship?	10M	4	3
	<b>OR</b>			
Q.5(B)	Describe the factors to consider when choosing a location for a plant layout unit in entrepreneurship?	10M	4	3

Q.6(A) Explain how inventory control can help a company reduce costs, increase efficiency, and improve customer satisfaction. 10M 5 3

OR

Q.6(B) Outline the benefits and challenges of using different distribution channels, including direct sales, wholesalers, retailers, and e-commerce. 10M 5 3

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Hall Ticket No: 

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Question Paper Code: 18ECE421

**MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE**  
(UGC-AUTONOMOUS)

B.Tech. IV Year II Semester (R18) Regular &amp; Supplementary End Semester Examinations – May 2023

**WIRELESS SENSOR NETWORKS**

(ECE)

Time: 3Hrs

Max Marks: 60

Attempt all the questions. All parts of the question must be answered in one place only.

All parts of Q.no 1 are compulsory. In Q.no 2 to 6 answer either A or B only

Q. No.	Question	Marks	CO	BL
Q.1	i. List out various wireless sensor networks?	1M	1	1
	ii. Summarize the purpose of radio transceiver in WSN?	1M	1	2
	iii. List out various types of memories?	1M	2	1
	iv. Recall the usage of Analog to digital subsystem.	1M	2	1
	v. Classify WSN MAC protocols	1M	3	2
	vi. Recall the goals of B-MAC.	1M	3	1
	vii. What is data gathering?	1M	4	1
	viii. Define sink mobility.	1M	4	1
	ix. Define the quality of sensor network.	1M	5	1
	x. Recall the need of Gateway.	1M	5	1
Q.2(A)	Explain about any two applications of wireless sensor networks.	10M	1	2
OR				
Q.2(B)	Summarize about the challenges and constraints in designing a wireless sensor network.	10M	1	2
Q.3(A)	Analyze the basic functions of Operating system.	10M	2	4
OR				
Q.3(B)	Outline about Tiny OS importance in wireless sensor networks	10M	2	2
Q.4(A)	Summarize about Vector routing Protocols used in WSN.	10M	3	2
OR				
Q.4(B)	Analyze the working of Zigbee (IEEE 802.15.4) with frame formats and list out its advantages and disadvantages.	10M	3	4
Q.5(A)	Explain about various types of dissemination protocols used in WSN.	10M	4	2
OR				
Q.5(B)	Summarize about the various security protocols used in sensor networks.	10M	4	2
Q.6(A)	Categorize the types of mobility in sensor networks.	10M	5	4
OR				
Q.6(B)	Analyze the Gateway concept used in WSN in detail.	10M	5	4

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(UGC-AUTONOMOUS)

**B.Tech IV Year II Semester (R18) Regular & Supplementary End Semester Examinations,  
May – 2023****SOFTWARE PROJECT MANAGEMENT**

(Computer Science and Engineering)

Time: 3Hrs

Max Marks: 60

Attempt all the questions. All parts of the question must be answered in one place only.  
All parts of Q.no 1 are compulsory. In Q.no 2 to 6 answer either A or B only

Q.No	Question	Marks	CO	BL
Q.1	i. What are the components of software project management?	1M	1	1
	ii. Define cost estimation in software project management.	1M	1	1
	iii. What are measurements in software?	1M	2	1
	iv. Define software Metrics.	1M	2	1
	v. Why need for Software Quality?	1M	3	1
	vi. List any four Software Quality Assurance Standards.	1M	3	2
	vii. What is Software Risk?	1M	4	1
	viii. Why need risk management in software industry? Justify	1M	4	1
	ix. Differentiate between Primavera and MS Projects.	1M	5	2
	x. State Redmine Project management.	1M	5	1
Q.2(A)	Explain the software project management tools and techniques.	10M	1	4
<b>OR</b>				
Q.2(B)	Discuss the various principles of Agile methods & SCRUM.	10M	1	3
Q.3(A)	What are the key issues in measuring and evaluating project performance in software project management? Illustrate in detail.	10M	2	2
<b>OR</b>				
Q.3(B)	Explain about Boehm's COCOMO model with its Project attributes.	10M	2	3
Q.4(A)	Illustrate various activities in Software Quality Assurance.	10M	3	4
<b>OR</b>				
Q.4(B)	Discuss the Quality in SW development.	10M	3	3
Q.5(A)	Discuss Tools and Techniques for Identification of Risks.	10M	4	4
<b>OR</b>				
Q.5(B)	List and explain the risk issues in SW development and implementation.	10M	4	3
Q.6(A)	How to use Redmine in project management? Explain with examples.	10M	5	4
<b>OR</b>				
Q.6(B)	Discuss the primavera with suitable example.	10M	5	3

\*\*\* END\*\*\*

**MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE**

(UGC-AUTONOMOUS)

**B.Tech IV Year II Semester (R18) Regular and Supplementary End Semester****Examinations, May– 2023****MODERN APPROACH TO CYBER SECURITY**

(Computer Science &amp; Technology)

Time: 3Hrs

Max Marks: 60

Attempt all the questions. All parts of the question must be answered in one place only.

All parts of Q.no 1 are compulsory. In Q.no 2 to 6 answer either A or B only

Q.No	Question	Marks	CO	BL
Q.1	i. Quote Euler's theorem	1M	1	1
	ii. What is primality test?	1M	1	1
	iii. Identify the advantages of a digital signature.	1M	2	2
	iv. Differentiate substitution and transposition ciphers.	1M	2	2
	v. What is salami attack?	1M	3	2
	vi. List out the types of cyber stalkers.	1M	3	2
	vii. Suggest any four tips for safety and security while using the computer in a cyber café.	1M	4	2
	viii. Differentiate between software key logger and Hardware key logger	1M	4	2
	ix. Why do we need security policies ?	1M	5	3
	x. What is email security policy?	1M	5	1
Q.2(A)	Solve the system below using the Chinese remainder theorem and explain the step wise process. $x \equiv 3 \pmod{5}$ $x \equiv 5 \pmod{7}$	10M	1	3
	OR			
Q.2(B)	Explain Euclidean algorithm with example	10M	1	2
Q.3(A)	Illustrate the functioning of RSA algorithm using the following parameters: P=7; q=11; e=17; M=8	10M	2	3
	OR			
Q.3(B)	Illustrate the functionality of round function of SHA-512 algorithm	10M	2	3
Q.4(A)	Illustrate the step by step process of how criminals will plan the attack.	10M	3	3
	OR			
Q.4(B)	Classify the attack on computer based social Engineering issue is by sending a fake E-mail to the user and gets their secure password for doing further unauthorized actions.	10M	3	2
Q.5(A)	Illustrate password cracking mechanisms and guidelines.	10M	4	3
	OR			
Q.5(B)	How phishing works? Explain in detail.	10M	4	2
Q.6(A)	Describe in detail about how to write security policies.	10M	5	3
	OR			
Q.6(B)	Explain about Internet and email security policies.	10M	5	3

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**B.Tech IV Year II Semester (R18) Regular & Supplementary End Semester Examinations,**  
**May– 2023**

**MASTERING VIRTUALIZATION**

(Computer Science & Technology)

Time: 3Hrs

Max Marks: 60

Attempt all the questions. All parts of the question must be answered in one place only.  
All parts of Q.no 1 are compulsory. In Q.no 2 to 6 answer either A or B only

Q.No	Question	Marks	CO	BL
Q.1	i. Define Hypervisor.	1M	1	1
	ii. What are the primitive operations of Virtualization?	1M	1	1
	iii. List the features of Hardware virtualization.	1M	2	1
	iv. Differentiate between Full virtualization and Para virtualization.	1M	2	2
	v. What are the benefits of desktop virtualization?	1M	3	1
	vi. What is mean by Virtual Private Network?	1M	3	1
	vii. How can we Manage and Monitor a Virtual Machine?	1M	4	2
	viii. List various virtual machine monitoring tools.	1M	4	1
	ix. Write the steps to deploy virtual machine.	1M	5	1
	x. Why data center automation is important?	1M	5	1
Q.2(A)	i) Explain the taxonomy of virtual machine.	5M	1	2
	ii) Compare Type 1 and Type 2 hypervisors.	5M	1	2
OR				
Q.2(B)	With a neat sketch, explain virtualization reference model.	10M	1	2
Q.3(A)	Discuss in detail about Full Virtualization and Para Virtualization.	10M	2	2
	OR			
Q.3(B)	How Server virtualization works? Explain with example.	10M	2	4
Q.4(A)	Discuss in detail about Network Virtualization with a neat sketch.	10M	3	2
	OR			
Q.4(B)	Illustrate Desktop Virtualization with a neat diagram.	10M	3	2
Q.5(A)	Demonstrate in detail about Virtual Machine Management tools.	10M	4	2
	OR			
Q.5(B)	How we can create customized and modifying virtual machines? Explain in detail.	10M	4	4
Q.6(A)	Explain in detail about software-defined data center with its components.	10M	5	2
	OR			
Q.6(B)	Discuss about automation in security and Tools for data center automation.	10M	5	2

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**B.Tech IV Year II Semester (R18) Regular & Supplementary End Semester Examinations,**  
**May – 2023**

**WIRELESS AND SENSOR NETWORKS**

(Computer Science & Technology)

Time: 3Hrs

Max Marks: 60

Attempt all the questions. All parts of the question must be answered in one place only.  
All parts of Q.no 1 are compulsory. In Q.no 2 to 6 answer either A or B only

Q.No	Question	Marks	CO	BL
Q.1	i. Specify the IEEE standard for UWB.	1M	1	1
	ii. Define Scatternet.	1M	1	1
	iii. In which IEEE standard, mobility is included in WiMAX	1M	2	1
	iv. How many devices are there in Zigbee network?	1M	2	1
	v. List the Characteristics of Wireless Sensor Networks.	1M	3	2
	vi. State the differences mobile ad-hoc vs. sensor networks.	1M	3	2
	vii. What is meant by Data aggregation?	1M	4	1
	viii. Write the Proactive routing protocols.	1M	4	1
	ix. Define Time of Arrival.	1M	5	1
	x. How do the terms global position and relative position differ each other.	1M	5	1
Q.2(A)	Define UWB and explain location tracking applications of UWB.	10M	1	4
<b>OR</b>				
Q.2(B)	With neat diagram explain the RFID System.	10M	1	3
Q.3(A)	Explain the Wireless Metropolitan Area Networks.	10M	2	4
<b>OR</b>				
Q.3(B)	Discuss the physical layer specifications defined by WiMAX.	10M	2	3
Q.4(A)	Illustrate the architecture of Sensor Node.	10M	3	4
<b>OR</b>				
Q.4(B)	Compare and contrast the differences between SPI & I2C communication interfaces.	10M	3	3
Q.5(A)	Explain the Data-centric routing.	10M	4	4
<b>OR</b>				
Q.5(B)	Compare and contrast the working of distance vector routing and link state routing.	10M	4	3
Q.6(A)	Describe the Time synchronization in wireless sensor network	10M	5	3
<b>OR</b>				
Q.6(B)	Discuss Range-free techniques for Localization.	10M	5	4

\*\*\* END\*\*\*