



Bharatiya Vidya Bhavan's

SARDAR PATEL COLLEGE OF ENGINEERING

(Government Aided Autonomous Institute)

Munshi Nagar, Andheri (W) Mumbai - 400058



✓ November
END SEMESTER December 2025 / RE-EXAM February 2026

Program: M.Tech. [CM/SE/PEPS] Second Year M.tech Duration: 03 hrs.

Course Code: VE-MTCM301, VE-MTSE301, VE-MTPE301 Maximum Points:

Course Name: Disaster Management Semester-III Semester: III

Notes:

1. Question 1 is compulsory
2. Solve any FOUR from the remaining SIX Questions
3. Accompany your answers with suitable sketch, examples, facts and figures, wherever necessary.
4. Start each main question from new page.

Const. Mgmt. Struct. Engg. 21/11/25

Q.no	Question	Points	CO	BL	Module no.
1	a. Define disaster and give two recent disasters you have known about that occurred in India. (5) b. State the differences between hazard and vulnerability. (5) c. Define 'Disaster management Cycle' with a neat diagram. (5) d. Explain briefly the main goal and priority of Sendai Framework of Disaster Risk Reduction (SFDRR). (5)	20	1,2,3,4	1,2	1,2,3,4,5,6
2.a	Define 'Disaster Impact' and discuss DALY method used for impact assessment for a disaster.	12	1,2,3,4	3	2
2.b	Describe the typical working of a seismograph for measuring the Earthquake intensity	8	1,2,3,4	3	4
3.a	Explain the structure of a tropical cyclone. Discuss the potential damages of a tropical cyclone with an example.	12	1,2,3,4	3	3
3.b	Explain how hazard mapping helps for analyzing the severity of any disaster	8	1,2,3,4	3	2
4.a	Give the recent cyclones that have occurred in India in 2024 & 2025. Discuss how recovery and rehabilitation is carried out Post cyclones.	12	1,2,3,4	1,2,3	4,6
4.b	Discuss the Disaster Management Act 2005 and its significance for institutionalizing disaster risk governance.	8	1,2,3,4	3	5
5.a	Define structural and non-structural mitigation measures with suitable examples. Explain the importance of structural mitigation in reducing	12	1,2,3,4	1,2,3	6



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	physical damage during natural disasters. Discuss any three non-structural mitigation strategies that institutions or communities can adopt to minimize disaster risk.				
5.b	Explain the disaster management cycle with suitable examples. Discuss the functions of pre-disaster, during-disaster, and post-disaster phases.	8	1,2,3,4	1,2	1
6.a	Identify the areas within our college campus (classroom, office, seminar halls, laboratories, electrical rooms, etc.) that are more prone to fire hazards. Discuss the preparedness measures that the college should adopt to reduce fire risks. Suggest suitable mitigation and emergency response strategies to be implemented in case a fire incident occurs.	12	1,2,3,4	3	5
6.b	Describe various classification of disasters with at least one example of each disaster.	8	1,2,3,4	1,2,3	1
7	Evaluate the disaster mitigation and multi-agency coordination strategies used during the Tham Luang Cave Rescue (Thailand, 2018). Discuss the lessons applicable to engineers.	20	1,2,3,4	1,2,3	5,6



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RE
PREVIOUS SEMESTER EXAMINATION JANUARY 2026

Program: SY MTech CM

Duration: 3 hrs

Course Code: VE-MTCM304

Maximum Points: 75 points+25 pts assignment

Course Name: NPTEL (Ethics in engineering practice)

Semester: III

Q.No.	Questions	Points	BL	Module No.
Q1	Multiple choice questions	25 points	II-III	1-VIII
	<p>I. An action that is legal but violates fundamental moral duties would be classified as:</p> <p>a) Ethical and legal b) Ethical but illegal c) Unethical but legal d) Unethical and illegal</p> <p>II. Rule utilitarianism differs from act utilitarianism primarily because it:</p> <p>a) Focuses on outcomes rather than intentions b) Prioritises moral rules over individual actions c) Rejects social welfare considerations d) Is incompatible with engineering practice</p> <p>III. Which ethical theory places maximum emphasis on character traits of the engineer?</p> <p>a) Utilitarianism b) Rights ethics c) Duty ethics d) Virtue ethics</p> <p>IV. Cost-benefit analysis is ethically limited mainly because it:</p> <p>a) Ignores financial feasibility b) Cannot be applied to public projects c) May exclude non-quantifiable social and environmental values d) Always favours private players</p> <p>V. An engineer refusing to approve a technically safe but environmentally harmful project is best justified using:</p> <p>a) Act utilitarianism b) Ethical relativism c) Virtue ethics d) Professional negligence</p>			



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PREVIOUS SEMESTER EXAMINATION JANUARY 2026

	<p>VI. The primary obligation of an engineer according to professional codes is towards:</p> <ul style="list-style-type: none">a) Employerb) Clientc) Society and public welfared) Shareholders <p>VII. Which situation best represents an appearance of conflict of interest?</p> <ul style="list-style-type: none">a) Accepting a bribeb) Designing costlier systems for higher professional feesc) Sharing confidential datad) Rejecting competitive bidding <p>VIII. Whistle-blowing is ethically justified when:</p> <ul style="list-style-type: none">a) Employer reputation is at riskb) Personal gain is possiblec) All internal remedies have failed, and public harm is imminentd) Anonymous disclosure is convenient <p>IX. Ethical dilemmas differ from technical problems because they:</p> <ul style="list-style-type: none">a) Have only one correct solutionb) Involve value conflicts and uncertaintyc) Are governed only by lawsd) Can be solved using codes alone <p>X. Which ethical theory is most likely to oppose a dam project due to the displacement of a single landowner?</p> <ul style="list-style-type: none">a) Utilitarianismb) Virtue ethicsc) Rights ethicsd) Ethical egoism <p>XI. Professional discretion primarily refers to:</p> <ul style="list-style-type: none">a) Freedom from accountabilityb) Application of judgment based on expertisec) Legal immunityd) Confidentiality only <p>XII. A code of ethics primarily functions as:</p> <ul style="list-style-type: none">a) A legal documentb) A moral checklistc) A framework for ethical judgmentd) A punishment mechanism			
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XIII.	Ethical relativism argues that: a) Ethical principles are universal b) Ethics depend on context and culture c) Ethics are enforceable by law d) Professional ethics override morality			
XIV.	Which is NOT a justification for confidentiality? a) Respect for autonomy b) Trustworthiness c) Competitive advantage d) Personal convenience			
XV.	An engineer sharing insider information to help a friend invest is an example of: a) Professional loyalty b) Acceptable conflict c) Ethical leadership d) Conflict of interest			
XVI.	Virtue ethics would primarily ask: a) Is this action legal? b) Does this maximise benefit? c) Does this reflect good character? d) Is this permitted by code?			
XVII.	Ethical dilemmas with multiple reasonable solutions are best described as: a) Right–wrong problems b) Legal conflicts c) Better–worse problems d) Negligence cases			
XVIII.	Engineers are often viewed as positivists because they: a) Reject ethical reasoning b) Depend solely on empirical facts c) Focus only on profit d) Avoid public accountability			
XIX.	Which ethical theory least considers consequences? a) Utilitarianism b) Duty ethics c) Cost–benefit ethics d) Act utilitarianism			
XX.	Confidentiality obligations after changing jobs: a) End immediately b) End after one year c) Continue indefinitely unless released d) Apply only to patents			
XXI.	An ethical corporate climate is primarily influenced by:			



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	<p>a) Written codes alone b) Individual morality only c) Leadership commitment and organisational culture d) Legal enforcement</p> <p>XXII. Conscientious refusal applies when an engineer: a) Disagrees technically b) Faces unethical directives c) Seeks promotion d) Violates confidentiality</p> <p>XXIII. Engineering ethics mainly differs from personal ethics because it: a) Is optional b) Focuses on organisational decisions c) Ignores individual responsibility d) Is legally enforced</p> <p>XXIV. Abuse of codes of ethics occurs when they are used to: a) Educate professionals b) Encourage dialogue c) Suppress criticism and protect status quo d) Promote accountability</p> <p>XXV. Ethical decision-making in engineering is best described as: a) Algorithmic b) Rule-based only c) Multi-theoretical and contextual d) Purely subjective</p>			
Q2	Explain in short any 10	30 points	III-IV	1-VIII
	<p>i. Explain act utilitarianism and rule utilitarianism with one example. ii. Discuss the ethical limitations of cost-benefit analysis in infrastructure projects. iii. Explain the concept of rights ethics with reference to engineering practice. iv. Describe the four-point rule for whistle-blowing. v. Explain the role of judgment and discretion in engineering decisions. vi. Discuss actual, potential, and apparent conflict of interest with examples. vii. Explain why codes of ethics are not substitutes for moral judgement.</p>			



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	<p>viii. Discuss how virtue ethics can guide engineers in resolving ethical dilemmas.</p> <p>ix. Explain the concept of an ethical corporate climate and its key features.</p> <p>x. "Engineering design problems resemble ethical problems." Justify this statement.</p> <p>xi. Explain the difference between ethical, unethical, and illegal actions with suitable examples from engineering practice.</p> <p>xii. Discuss the ethical challenges faced by engineers due to tight project timelines and budget constraints.</p>			
Q3	Answer the questions (any 10)	20	III-IV	1-VIII
	<p>i. Distinguish between ethics and morals.</p> <p>ii. State any two limitations of utilitarianism in engineering.</p> <p>iii. What is meant by professional conscience?</p> <p>iv. Define ethical dilemma with one line explanation.</p> <p>v. List two situations where confidentiality must be maintained.</p> <p>vi. What is meant by conflict of interest?</p> <p>vii. Mention any two roles of a code of ethics.</p> <p>viii. State two differences between personal and professional ethics.</p> <p>ix. What is competitive bidding and why is it ethically sensitive?</p> <p>x. What is meant by virtue in virtue ethics?</p> <p>xi. What is meant by ethical relativism in professional ethics?</p> <p>xii. State any two ethical responsibilities of engineers towards the environment.</p>			