

NATIONAL INSTITUTE OF
TECHNICAL TEACHERS' TRAINING AND RESEARCH
CHENNAI - 600 113

**Ph.D. (Engineering Education) of University of Madras
ENTRANCE TEST**

Session: April 2011

Time: 2 hrs & 30 Minutes

Marks: 100

ANSWER ALL THE QUESTIONS

Part – A

(10 x 3 Marks = 30 Marks)

Answer each of the following questions in about 50 words:

1. List any two characteristics of Inter-Disciplinary Research.
2. Give an example for "Action Research".
3. List any three characteristics of a Sample to be selected for Survey Research.
4. Distinguish between "Questionnaire" and "Interview Schedule".
5. Distinguish between "Validity" and "Reliability".
6. What are the uses of Historical Research?
7. Distinguish between "Nominal Scale" and "Ordinal Scale" with an example for each.
8. Illustrate "Null Hypothesis" with an example.
9. Distinguish between Approval by the AICTE and Accreditation by the National Board of accreditation.
10. Illustrate the reference format of a book in a research report.

Part –B

(5 x 8 marks = 40 marks)

Answer each of the following questions in about 120 Words:

1. Identify six problems in Engineering Education caused by the rapid growth of Deemed Universities in India.
2. Which are the main aspects to be included in a 'Research Proposal' to be sent to a funding agency?
3. Illustrate the methodology of 'Experimental Research' with an example.
4. Distinguish between Longitudinal and Cross Sectional Research with an example for each.
5. What are the main components of a 'Research Report'?

PART – C (30 marks)

Analyse the following case and answer the questions given below:

A Private Engineering College, which is aided by the Government and has secured autonomous status, wants to identify its **Strengths**, **Weaknesses**, **Opportunities** and **Threats** (SWOT). The strengths and weaknesses pertain to the internal environment of the college and they include (i) Human Resources, (ii) Programmes, (iii) Infrastructural facilities and (iv) Systems and Procedures. The opportunities and threats relate to the external environment of the college and they include (i) Social changes, (ii) Technological changes, (iii) Economic changes and (iv) Political changes which will have an impact on the college.

Questions:

- (i) What type of research design will you follow to conduct a SWOT analysis of the Engineering College? (7 marks)
- (ii) a) From whom you will collect the required data? (4 marks)
b) What type of tools will be used for data collection? (4 marks)
- (iii) How will you ensure the data collected is "Valid" and "Reliable"? (6 marks)
- (iv) What techniques will you use for analysing the data? (5 marks)
- (v) How will you ensure that the findings and recommendations of your study are used by the stakeholders? (4 marks)



**National Institute of Technical Teachers' Training and Research,
Chennai – 600 113**

Ph.D. (Engineering Education) of University of Madras

ENTRANCE TEST - July 2011

Time: 2 hrs & 30 Minutes

Marks: 100

ANSWER ALL THE QUESTIONS

**Part – A
(10 x 3 Marks = 30 Marks)**

Answer each of the following questions in about 50 words:

6. Define 'Research'.
7. State any two purposes of "Interdisciplinary Research in Engineering Education".
8. Name three agencies in India which are providing funds for "Research in Engineering".
9. What is meant by Action Research?
10. Distinguish between 'Longitudinal survey' and 'Cross sectional survey'.
11. Give an example for Null Hypothesis.
12. How would you select a sample of 80 students for a research study on "Students Problems" from an Engineering college which has a total of 480 students?
13. If five points were added to each score in a distribution how would this change each of the following: the range, the median and the mode.
14. Illustrate the difference between Ratio Scale and Interval Scale with an example for each.
15. Illustrate the reference format of a Journal paper in a Doctoral Research thesis.

**Part – B
(5 x 8 marks = 40 marks)**

Answer each of the following questions in about 120 Words:

16. What are the practical aspects to be considered while selecting a problem for a Doctoral Research Project in Engineering Education?
17. What are the main aspects to be included in a "Research Proposal" to be sent to a funding Agency?
18. Illustrate the difference between "Experimental Research" and "Descriptive Research" with an example for each.
19. From your experience you feel that a particular method of dealing with students will motivate them to study better. You want to establish this in a scientific manner. How will you frame this perception into a researchable problem?

20. Distinguish between the following with respect to a Degree Programme conducted in an Engineering College:

- (i) Approval by the AICTE
- (ii) Affiliation by the concerned University
- (iii) Accreditation by the National Board of Accreditation
- (iv) ISO certification

PART – C
(30 marks)

Analyse the following case and answer the questions given below:

An autonomous Engineering College is conducting 10 U.G. and 3 P.G. Programmes. It has 3000 students and 300 teachers. The college is using a particular system for Performance Appraisal of its faculty members. The College wants to find the effectiveness of its Performance Appraisal System. Assuming that you are appointed as the consultant for this purpose answer the following questions.

Questions:

- (vi) How will you design a research project to identify the effectiveness of the Performance Appraisal System? (3 marks)
- (vii) What methodology will you use? Describe it. (8 marks)
- (viii) From whom will you collect data? What type of instruments and techniques will be used for data collection? (9 marks)
- (ix) How will you analyse the data? (4 marks)
- (x) What will be included in your report? (6 marks)



**National Institute of Technical Teachers' Training and Research,
Chennai – 600 113**

Ph.D. (Engineering Education) of University of Madras

ENTRANCE TEST – February 2010

Time: 2 hrs & 30 Minutes

Marks: 100

ANSWER ALL THE QUESTIONS

**Part – A
(10 x 3 Marks = 30 Marks)**

Answer each of the following questions in about 50 words:

21. State any three purposes of "Research".
22. Distinguish between "Basic Research" and "Applied Research".
23. What are the purposes of reviewing the research studies completed in the past?
24. Give an example for Null Hypothesis.
25. List three tools used for collecting data in Survey Research.
26. List any one use of Man Power Information System to: (i) Industries and (ii) Educational institutions.
27. How would you select a sample of 120 students for a research study on "Students Problems" from an Engineering college which has a total of 1080 students?
28. Distinguish between 'Statistics' and 'Parameter'.
29. Distinguish between 'Ratio Scale' and 'Interval Scale'.
30. Illustrate the meaning of 'Innovation' with an example.

**Part – B
(5 x 8 marks = 40 marks)**

Answer each of the following questions in about 120 Words:

31. What are the criteria to be used while selecting a problem for a Doctoral research study in Engineering Education?
32. What are the main aspects to be included in a "Research Proposal" to be sent to a funding Agency?
33. Illustrate the difference between Experimental method and Survey Method of Research with an example for each.
34. How will you determine the validity and reliability of a Questionnaire or Test?
35. Distinguish between the following with respect to the Degree Programmes conducted by a Deemed Technical University:
 - (i) Approval by the AICTE
 - (ii) Accreditation by the National Board of Accreditation

(iii) Approval by the UGC

P.T.O.

PART – C
(30 marks)

Analyse the following case and answer the questions given below:

A deemed University is conducting 10 UG and 3 PG Programmes in Engineering. It has 3000 students and 300 faculty members. The University is using a particular system for Performance Appraisal of its faculty members. The University wants to determine the effectiveness of its Performance Appraisal System and improve it. Assuming that you are appointed as a consultant for this purpose answer the following questions:

Questions:

- (i) How will you design a research project to identify the effectiveness of the Performance Appraisal System? (3 marks)
- (ii) What methodology will you use? Describe it. (8 marks)
- (iii) From whom will you collect data? What type of instruments and techniques will be used for data collection? (9 marks)
- (iv) How will you analyse the data? (4 marks)
- (v) What will be included in your report? (6 marks)



**National Institute of Technical Teachers' Training and Research,
Chennai – 600 113**

Ph.D. (Engineering Education) of University of Madras

ENTRANCE TEST - July 2009

Time: 2 hrs & 30 Minutes

Marks: 100

ANSWER ALL THE QUESTIONS

**Part – A
(10 x 3 Marks = 30 Marks)**

Answer each of the following questions in about 50 words:

36. State any three purposes of "Research".
37. Identify two research problems in Engineering Education.
38. Name three agencies in India which are providing funds for "Research in Engineering".
39. Distinguish between "Basic Research" and "Applied Research".
40. What is meant by Action Research?
41. Distinguish between Descriptive Research & Historical Research.
42. Give an example for Null Hypothesis.
43. How would you select a sample of 60 students for a research study on "Students Problems" from an Engineering college which has a total of 420 students?
44. Distinguish between "Ordinal Scale" and "Ratio Scale" with an example for each.
45. If five points were added to each score in a distribution how would this change each of the following: the range, the median and the mode.

**Part – B
(5 x 8 marks = 40 marks)**

Answer each of the following questions in about 120 Words:

46. What are the practical aspects to be considered while selecting a problem for a Doctoral Research Project in Engineering Education?
47. What are the main aspects to be included in a "Research Proposal" to be sent to a funding Agency?
48. Illustrate the difference between "Experimental Research" and "Survey Research" with an example for each.
49. From your experience you feel that a particular method of dealing with individuals will motivate them to work better. You want to establish this in a scientific manner. How will you frame this perception into a research problem?

50. Distinguish between the following with respect to a Degree Programme conducted in an Engineering College:

- (v) Approval by the AICTE
- (vi) Affiliation by the concerned University
- (vii) Accreditation by the National Board of Accreditation
- (viii) ISO certification

PART – C
(30 marks)

Analyse the following case and answer the questions given below:

A Polytechnic College, which is aided by the Government and has secured autonomous status, wants to identify its **Strengths, Weaknesses, Opportunities and Threats (SWOT)**. The strengths and weaknesses pertain to the internal environment of the college and they include (i) Human Resources, (ii) Programmes, (iii) Infrastructural facilities and (iv) Systems and Procedures. The opportunities and threats relate to the external environment of the college and they include (i) Social changes, (ii) Technological changes, (iii) Economic changes and (iv) Political changes, which will have an impact on the college.

Questions:

- (xi) What type of research design will you follow to conduct a SWOT analysis of the Polytechnic? (7 marks)
- (xii)
 - a) From whom you will collect the required data? (5 marks)
 - b) What type of tools will be used for data collection? (5 marks)
- (xiii) How will you ensure the data collected is “Valid” and “Reliable”? (4 marks)
- (xiv) What techniques will you use for analysing the data? (5 marks)
- (xv) How will you ensure that the findings and recommendations of your study are used by the stakeholders? (4 marks)

