

COMPETENCY MANAGEMENT

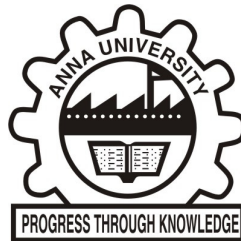
A THESIS

Submitted by

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CHAPTER 4

SELECTION BASED ON INNATE ABILITIES FOR KEY ROLES

4.1 INTRODUCTION

New product development and manufacturing of products with consistent quality are major challenges for organisations in a highly competitive environment. Hence, the key roles in Research and Development, that of Production Engineering and Manufacturing operations were initially chosen for the study. The roles identified were:

- CAD/Design engineer who does CAD modeling and design of automotive parts
- Proving/Process and Facilities planning engineer who proves the new manufacturing cells and plan the process sequence, facilities planning for automotive parts
- Team/Group leader who manages manufacturing operations of a cell or a module with a team of shop floor employees.

A job analysis was conducted along with the line managers of the respective functions using job descriptions, which included the purpose of the roles, responsibilities and Key Result Areas (KRAs). The detailed job descriptions are shown in Appendices A 4.1 and A 4.2. The team considered roles and responsibilities as performed currently and also how these roles

would evolve in the near future, based on the strategic direction of the organization (Appendix A.4.3).

Picking up the cues from Spencer & Spencer to use the traits and motives which is equivalent to innate ability according to CLC research for selection process was established. The motive and trait competencies were identified from the key words from the job analysis (Appendix A.4.3) along with an applied psychologist for the three key roles.

4.2 DIMENSIONS AND DEFINITIONS OF TRAIT, MOTIVE AND VALUES

Traits and motives relevant to three key roles were identified. The dimensions of the traits, motives and values were articulated and defined with the context of the roles in the company.

Traits: Traits are physical characteristics and consistent responses to situations or information, such as :

1. **Rigour:** Commitment to purpose, Attention to details, Eye for abnormality, Self-discipline, Compliance and Decisiveness.
2. **Sociability:** Inclusion, Belongingness, Intimacy, Collaboration and Empathy.
3. **Idea orientation:** Idea orientation include Imagination, Visualization and Ideation.
4. **Abstract reasoning :** Synthesizing, Correlating, Theorizing and recognizing patterns and Generalizing for application.
5. **Flexibility:** Adaptability and Willingness to change.
6. **Urgency:** Sensing and Speed of response.

7. Influencing: Persuading, Assertiveness and Expressing.
8. Diagnosing: Perceiving the symptoms, looking for clues, identifying the root cause and ways of solving the problems.

The definitions and behavioural indicators of each of the dimensions of the traits are shown Appendix A.4.4.

Motives: Motive is a thing a person consistently thinks about or wants that cause action. Motives “drive, direct, and select” behavior towards certain actions or goals and away from others. From the motivational needs proposed by McClelland, two of the motivation needs were chosen for benchmarked roles – achievement and affiliation which are appropriate for the early level roles in the organisation. Both are towards attaining or accomplishing for satisfaction. These two are not programmed towards avoiding anything. For example, not towards avoiding a mistake but towards attaining something appropriate or improved state.

1. Achievement: Need for ‘achievement’ is an essential motivation for excelling in the roles – it is the strong desire to reach the goal with total perseverance; it generates a 'never-say-die' attitude in people.
2. Affiliation: It is a strong desire to be with people and build relationships.

Values: Values are ‘enduring beliefs’ that drive people towards important pursuits in their life and also towards day-to-day actions. People take pride in them and celebrate the practice of values. Values established for the organisation and considered for assessment were, Trust, Value, Exactness and Curiosity to learn. Definitions of the values is shown in Appendix A.4.5.

Table 4.1 Traits, motives and values for key roles

	CAD/ Design Engineer	Proving / Process planning engineer	Team / Group Leader
Traits	Rigor (H)	Rigor (H)	Rigor (H)
	Sociability (M)	Sociability (M)	Sociability(H)
	Idea orientation (H)	Idea orientation (M)	
	Abstract reasoning (H)	Abstract reasoning (M)	
	Flexibility (M)	Flexibility (H)	
			Influencing (H)
			Urgency (H)
Motives	Achievement (H)	Achievement (H)	Achievement (H) Affiliation (H)
Values	Trust (H) Exactness Learning (curiosity)	Trust (H) Exactness Learning (curiosity)	Trust (H) Exactness Learning (curiosity)

Table 4.1 indicates the traits, motives and values for three key roles considered in the first phase. Some of the traits or motives are relevant only to a few roles and not to other roles. Some roles require traits at a higher level (marked 'H') compared to other roles. Some of the elements of the traits which are relevant for the roles were also articulated as shown in Appendix A.4.5. For example, rigor for a CAD engineer requires 'attention to details' whereas for the Team leader, it is 'eye for abnormality'.

4.3 SELECTION PROCESS

Four stage of selection process was established for selecting students for first year of Collaborative program in the Polytechnic and Engineering college as well as final year students for entry level roles from the educational institutes. Following are the stages used for the selection:

Stage1: Consistent academic performance: Initial screening is carried out using consistent academic performance for three years. This is very important

as this shows the consistent motivation and engagement of students in their academic work. Any drop in the performance in a given year due to an assignable cause is considered on merits.

Stage 2: Technical tests and Aptitude or Potential ability tests: Technical tests are conducted based on their school curriculum for Mathematics, Physics, Chemistry and English for first year of CEP students. The questions are based on Central Board for Secondary Education (CBSE) pattern which contains 70% of questions to check “understand” and “apply” and only 30% is for “remember”. Generally, Secondary School Education Boards in the States’ pattern tend to be oriented to “rote learning”. Engineering is all about application and hence rote memory is not as useful. In the case of the final year students, the question paper is prepared using GATE (Graduate Aptitude Test in Engineering) pattern which is used by Indian Institutes of Technology for admission to Post Graduate programmes in Engineering. These tests are useful to understand the gap, based on which some bridging can be done for the students prior to learning engineering and finishing for engineers prior to their taking up the roles.

Aptitude tests or potential ability tests are used to measure the latent ability of candidates to learn new job or skill relevant for the roles of the organization. These tests primarily detect peculiarities, strengths and deficiencies in a person’s sensory or intellectual capacity. Speed, perception, comprehension, interpretation, extrapolation, relating and accuracy are the essence of these tests. Some of the tests used for this purpose include Perceptual Speed, Analytical Differentiation, Logical Problem Solving, General Reasoning, Spatial Orientation, EQ Tests, Divergent Thinking and Imagination tests. The description of the tests, attributes the tests measure and how the tests scores are deduced and weightage assigned for the dimensions of traits, motives values are explained in the Appendix A.4.6.

Stage 3: Experiential interventions for assessment and learnability tests: These activities are designed as individual task or group work. Individual activities are in the form of exercises or games. Group work is in the form of group discussions (Theme based) or group tasks such as collage making on a theme. For example, the group activity (Game) of “Collage making” of a monument designed and collectively executed and “NASA”, the group exercise of discussing to arrive at consensus on the priorities of 15 items in a critical situation. The group processes and individual roles and behaviours are observed with a process focus by a panel of three trained observers. The description of the tests and weightage for different dimensions of the traits and motive are explained in the Appendix A.4.7.

As most of the students come from the ‘rote’ based education, a learnability test is conducted. Few themes are selected in Mathematics and Science and tests are conducted. Then the students are taught the concept using pedagogy aligned to auditory, visual and kinesthetic. The same test is repeated to check their learnability.

Stage 4: Behavioral Event Interview (BEI) is conducted by a panel of trained and experienced in-house resource persons. This is an interface with a candidate encouraging him / her to share his success stories. By listening to his / her experiences and by positive probing, the panel understands the potential of the candidate. This process of “appreciative inquiry” is non-threatening to the candidate and helps to elicit his behavioral traits, efforts, motivation and values. Few aspects of Traits, Motive, Values can be captured through “BEI”. The technique is based on the assumption that past performance is a key indicator to future performance. It consists of asking specific positive questions that require the candidate to give an example of rewarding effort from past experience, which illustrates how they behaved in a particular challenging situation which led them to a successful state. In

attaining this state of excitement, what in them have stood in good stead with them to drive their behaviour from within. This is called by (David L Cooperrider 2005) as “life giving forces” in the discipline of AI. This will give evidence of the behaviour sought as well as how the person went about it. The answers are likely to be more candid, more honest and real because the person is asked to be specific and chunking up for his / her narrating the experience as a story.

Observing behaviours and assigning a score is a challenging task. This requires skills and experience. Structured three days workshops were conducted to train managers as Assessment Centre Observers (ACO) and formal qualification is carried out. One day workshop was organized for selected senior managers in the company and senior faculty in the institutes for conducting behavioural event interviews. Guidelines were established for BEI with indicating questions and guidelines for assigning rating as shown in Appendix A.4.8. A data base of qualified ACOs and BEI panel members and log of number of cycles is maintained. Choice of ACOs and BEI panel are made using this data base for every selection cycle.

Appendix A.4.9 shows the matrix of dimensions of traits, motives and value against each of the assessment tools explained with the weightages.

Using the principles of assessment methodology explained in literature survey, the selection process leverages on strengths of multiple tools for assessing each of the dimensions of traits, motives and values. Each of the dimensions are assessed by more than one tool.

Using the scores from all the assessment tools, final choice of selection is made and best fit of possible roles are also identified. Appendix A.4.10 shows the scores of students selected for Undergraduate programme in the engineering college. For each student, scores of traits, motive and values

are indicated. Based on the scores, roles that are most appropriate based on the innate abilities are suggested. It is evident while some students are found suitable for more than one role, some are suitable for only one role. Others not selected are not found suitable for any of the roles under consideration.

This selection process was initially applied for selection and role identification for the students in the Polytechnic for a diploma programme in mechanical engineering and later campus hiring for engineering graduates. This process was institutionalised for campus hiring for entry level employees and selecting students for CEP for the last three years. Using the experience gained during this period, the traits, motives were identified for most entry level roles in the organisation (Appendix A.4.11).

4.4 ARTICULATING ASPIRATION ALIGNED TO INNATE ABILITIES

Aspiration is about clarity of career goals and life goals. However, a large proportion of students joining engineering are driven by parental aspirations or peer group. The students and their parents are unaware of their aptitude or innate ability as well as of the career choices and the courses. Hence, they are driven by the popularity of the courses and immediate opportunities for placement in the campus. The students are not engaged during their studies, career and life. A reflection of this can be seen from a news paper clippings shown in Appendix A.4.12. In the state of Karnataka about 30,000 engineering students failed in the first semester. They sought a supplementary examination from Vishveshwaraiah Technical University (VTU) which was refused. Then the students and parents went to Karnataka high court and the final judgement advised that the students that they should not join a technical course due to peer pressure or to please the parents, but do so only if they have an aptitude for it. This kind of failure is common in many states in India.

When such engineers join the companies as employees, they are not fully engaged and contributing to their potential. Leaders must help employees clarify their personal identity and enhance their signature strengths and then help them see how those strengths fit with the goals and values of the organisation (Dave Ulrich 2010). To address these issues, a programme was developed for articulating aspiration called “DISHA” means Development of Individual Self for Holistic Advancement. The objectives of DISHA are:

- Create awareness about himself/herself on realities of self and life-path
- Develop perspectives on own professional self with reference to his/her role, organisation and society
- Set personal goals and align his/her choice of career in the organization

DISHA model is based on self, role, organization and society.

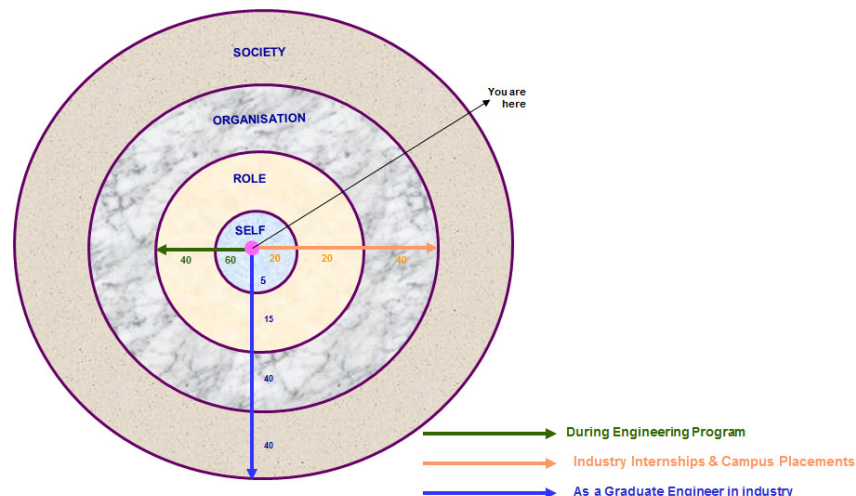


Figure 4.1 Model of DISHA

In this model,

- Self – innate abilities part of the personality
- Self in a Role – Competencies, Team Dynamics, Relationship with team,
- Role in the Organization – realize importance of a job, function, delivering to plan , professional ethics
- Organization in the Society – where do you fit in scheme of things, big picture orientation, moral and social responsibility towards society

A structured workshop was conducted for the fresh graduate engineers and students in their third year of engineering. With context setting for the workshop on automotive industry, competitive scenario, policy environment, HR challenges, Careers, the participants were facilitated to create a self-portrait which is a story telling exercise – in which the participants will rate self on innate abilities in given a format. Then they are guided to articulate their goals and link it to task efficiency with reference to the important tasks/activities of the target roles in the organisation. Based on these tasks, a discussion is initiated about how participants can engage themselves to acquire competencies for the roles leveraging their innate abilities to deliver superior performance and enhance potential. Then the engineers prepare an Individual Development Plan towards achieving their goal by taking responsibility for their development.

It was evident that such workshops served limited purpose to create an awareness about self, roles, organization and society. Clarity of their career life goal and articulating a roadmap require significant amount of time one on one with someone who can guide on this. Hence, the mentoring programme was piloted with five selected managers with two students each. Initial

findings show that there is a scope for such process. Now a team is working on developing a formal mentoring process.

4.5 SUMMARY

This experiment for establishing a selection process showed that

- As innate ability is one of the important aspect of competency, selection using innate ability is the starting point of developing competencies
- If the roles are defined sharply and innate abilities are identified, it is possible to establish a scientific basis to determine the most appropriate roles in the organisation.
- Assessing innate ability by observing behaviours, require well qualified and experienced observers and BEI panel members.
- Enabling students and employees to articulate aspiration in terms of career and life goal is the most challenging task. This require further research with a formal mentoring programme.

APPENDIX 4

Role description

	CAD Engineer	Proving Engineer	Team Leader
Purpose	Prepare error free 3D models / 2D drawings as per the approved design input sheet and release drawings within the time targets and create design solutions for parts that needs QCD targets	Install & commission machines/ plant equipment, development of Jigs, fixtures, tools as per process plan and prove the desired output along with necessary documentation	Consistently achieve quality and delivery targets in an hourly basis while maintaining the manufacturing cost as per norms
Responsibilities	- Study and understand requirements from design input sheet - Prepare CAD model using design guidelines - Optimize for part communization, part count - Identify Quality and cost and weight gap against targets - Conduct packaging and interfacing checks - Develop DVP (design verification plan) and execute the plan using predictive / analytical methods - Verify the design against known failure modes (Past FMEA, past product problems)/DFMEA/DFM/DFA requirements - Incorporate special characteristics derived from AQ/MBQ - Prepare drawings and release - Prepare BOM with every drawing release	- Conduct Machine Inspection as per equipment note - Install and commission machine and other equipment as per layout - Conduct trials and prove the equipment for QCD targets (machine capability, SMS, scrap cost, engine rework, vehicle rework etc.,) - Prepare TMOS and train operators - Carry out alpha, beta and QP trials as per plan - Carry out problem analysis & counter measures - Complete PPAP documentation - Implement productivity/process improvements as per plan - Conduct new paint development trials and proving (applicable for painting group) - Implementation of M/c FMEA points as per guidelines	- Conduct sunrise and sunset meetings - Organize resources required to achieve hourly targets and daily production plan - Conduct hourly PDCA - Maintain and improve 2S standards in the workplace - Audit JH at the planned frequency - Support workmen to achieve targets by addressing issues if any - Work as a reliever whenever required - Monitor efficiency of workmen - Update VCS - Provide training to workmen
Measure of Performance	- Create part design as per QCD (quality, cost and delivery) - Measure of effort and resource requirement to complete part design as per QCD - Quality of model and drawings - Drawing release time targets - Adherence to SOPs, new standards - Measure of improvement in part quality characteristics as compared to competition	- Cycle time as per process design plan - Machine capability/Rework level - Commissioning lead-time - Meeting project time lines for alpha, beta and QP - Process improvement targets - Adherence to QMS practice	- Hourly output - Reduced OOD (operator oriented effects) - TEI for team - First Aid – number of incidents - Near Misses – number of accidents

Target role description -2

	Part Design Engineer	Process and Facilities planning Engineer	Group Leader
Purpose	Design part /subsystems and release drawings meeting the QCD targets.	- Achieve QCD targets for given parts by manufacturing process design planning, verification and validation. - Improve existing processes to achieve PQCD targets.	Consistently achieve PQCDMS targets on shift basis in his unit
Responsibilities	- Study product definition and prepare design input sheet - Conduct bench mark study - Make design calculations and prepare design proposals - Review QCD targets and finalize option - Check for FEA and optimize design - Prepare detailed design with CAD engineer - Check for IPR and homologation - Conduct DFMEA \DFA\DFM\DFS, formulate DVP - Refine design based on feedback from supplier, PED, test lab etc., - Conduct FDR (self) and release drawing - Co-ordinate to complete test as per DVP (raise TRF, close ETR) - Check supplier drawing for proprietary parts and support approval - Update relevant SOPs	New Product / Capacity expansion - Prepare process flow and characteristics matrix - Conduct & prepare PFMEA - Complete equipment planning & ordering - Prepare tools, fixture & gauge plan - Prepare manufacturing cell layout options - evaluate & finalise - Monitor the progress of installation and commissioning - Support Proving Engineer in proving the QCD targets during Alpha, Beta & QP Improvement in Existing Processes - Prepare Gantt chart for the identified improvement projects - Analyse and identify the improvement actions - Complete PCR / PCO process for implementing the improvements - Audit the process, feedback & corrections	- Conduct Sunrise and Sunset Communication to Team Leaders - Audit Deployment of Workmen and Organize Resources - Audit and Improve 2S&J- - Carryout cell audit on adherence to standards / SDCA of part and process - Meet next customer on Q & D complaints & take corrective actions - Review and improve Unit performance measures - Conduct Shift PDCA - Review and Counsel workmen on attendance and efficiency - Update VCS - Training of Team Leaders and Workmen
Measure of Performance	- Achieve subsystem performance - Achieve durability - Achieve target Cost - Achieve NPI milestones - Reduce design changes post alpha	- Achieve Manufacturing process targets - Completion of productivity / improvement projects - Complete Process Validation - Complete PFA documentation	- Line Stopper at Customer End - Shift Output - OEE - Workmen Efficiency - Customer Complaints - Reject on/Rework - TEI-Teians, QCC and SIT - Near Miss

Challenges in the roles

Business Imperatives/ Expectations from the role	CAD/Part design Engineer	Proving/ Process & Facilities planning Engineer	Team Leader /Group Leader
1. Being a Challenger company	- Continuously tracks the <u>best in class</u> design and performance in the world <u>Raise the bar constantly</u> for himself/herself and others - Willing to <u>take risk</u> and test new ideas and learns from <u>experiments</u> continuously - Speed & momentum in decision-making & execution	- Continuously <u>challenge</u> the PQCDMS targets and achieve process breakthroughs - Willing to <u>take risk</u> and test new ideas through <u>experiments</u> - Speed & momentum in decision-making & execution	<u>Consistently</u> achieve the PQCDMS targets on a hourly, daily, monthly basis - Continuously <u>develop</u> <u>teams capability</u> to take on future challenges - Create a feeling of <u>fulfillment</u> for himself and team in achieving aspirational goals
2. Provide consistent quality of products and services across all plants and outlets	- Consistently deliver drawings/designs meeting QCD targets <u>right first time</u> - Diagnose and solve problems based on <u>root causes</u> <u>Rigor</u> in adhering to design processes and guidelines and continuous improvement of the same for improved <u>efficiency and effectiveness</u>. <u>Reduce drudgery</u> for him/her and for downstream functions by proactively picking potential problems and solving them	<u>Rigor</u> in adhering to design and validation of processes and demonstrate continuous improvement in PQCDMS - Able to achieve QCD targets <u>right first time</u> with minimum rework and fire-fighting - Effective Teamwork during process proving and handing over - Comprehensive understanding and Implementation of environmentally clean processes. <u>Rigor to standardize</u> processes to achieve sustainable benefits	- Adhere to all the daily management practices and SOPs - Continuously improve all the practices and SOPs to make it relevant all the time - Actively <u>look for abnormalities</u>, eliminate / <u>escalate</u> for resolution - Build <u>harmony</u> among the team and <u>synergize</u> the operations with feeder cells and customer cell
3. Continuous and timely Innovation for every chosen customer segments	- Understand customer (Internal and external) requirements, translate this to engineering quality characteristics and develop design solutions <u>Continuously learn</u> himself/herself relevant in view of customer demands and technological developments - Consciously utilize <u>minimum resources</u> for the entire lifecycle of the product	<u>Seek continuous feedback</u> from operations to deliver <u>Innovation</u> in process design and its implementation - Active <u>participation in upstream</u> NPD activities (like DFA, FMEA) and Company Manufacturing system activities like TPM, JIT, company wide logistics etc <u>Understand specific needs</u> of different customer segments and develop appropriate processes	<u>Contribute in the upstream</u> stages of new product introduction for <u>prevention of problems</u> <u>Actively learn</u> new products and processes and train his people for right first time

A.4.4 DEFINITION OF TRAITS

1. Rigour:

- Commitment to purpose – Goal orientation, Achievement orientation
- Self-discipline – Willingness to sacrifice, Withstanding criticism
- Attention to details – Data gathering, Information gathering, Sharp micro / macro data perception
- Eye for abnormality – Ability to differentiate and identify odd ones
- Compliance – Meticulous spirit to follow norms, rules, systems
- Decisive – Decision making plus perseverance

Rigorous persons set stretching goals and make efforts to surpass them. They pay attention to details about materials and events. They easily identify the deviations from normalcy or prescribed standards and meticulously follow rules, norms and systems. They are willing to sacrifice their resting time and withstand criticism. They make decisions quickly in making decisions and implement them with commitment to fulfil tasks and to deliver results.

2. Sociability:

- Inclusion – paying attention to a person and treating him as important
- Belongingness – willingness to join others on tasks particularly in challenging situations

- Intimacy – interpersonal openness, being close, affectionate
- Collaboration – supporting and complimenting, adding value
- Empathy – sensing the difficulties of others, concern for others difficulties, being in shoes of others

A sociable person is willing to join others on tasks, particularly in challenging situations. They are open and close to people, support and add value to other person's efforts. They understand other's difficulties and show concern for them by extending help.

3. Idea orientation:

- Imagination – anticipatory thinking, identifying possibilities and capturing the relatedness
- Visualization – dreaming, seeing the desired end state, holistic
- Ideation – generating new approaches

Idea oriented people visualize in their mind about a solution and a future position. They get a whole picture of the future state in their minds. They think about the future by identifying possibilities and grasping the relatedness between the present and future.

4. Abstract reasoning

- Synthesizing – organizing and coordinating things together, (observation step of problem solving)
- Correlating – comparing, relating cause and effect
- Theorizing and recognizing patterns
- Generalizing for application

“Abstract reasoning” relates to the theory of “cause and effect” to explain key events that we encounter. This is about a person’s ability to foresee the consequences and to take preventive steps. People with this trait recognize patterns and conceptualize their experiences. While solving problems, they organize information and put them together to understand the full position.

5. Flexibility:

- Adaptability – accepting a new idea and experiment, listen, try out new ideas,
- Willingness to change – sensitive to environment and appropriate response

People with flexibility are willing to generate and accept new ideas – they experiment, listen and try out new ideas.

6. Urgency:

- Sensing – vigilantly looking for deprivation or difficulties, emergencies
- Speed of response – instantaneous response to solve or restore situation or escalate and seek remedy

People with “urgency” vigilantly look for what is missing, deprived or experienced as a difficulty as they sense emergencies. They demonstrate speed of response by instantaneously responding to solve a problem by restoring the desirable situation or by escalating for action.

7. Influencing:

- Persuading – Getting others to accept & implement ones idea

- Assertiveness – standing for ones values, views, expressing a point of view
- Expressing – communicating along with feeling, thrust, involvement

People demonstrate “influencing” while persuading to make others accept and implement their ideas. They are assertive by standing for their values, views and strongly expressing their sure point of view. They communicate with feeling, thrust and involvement.

8. Diagnosing: People with “diagnosing” observe the difficulties in perceiving the symptoms, look for clues, and identify the root cause and ways of solving the problems.

A.4.5 DEFINITION OF CORE VALUES

Values: Values are ‘enduring beliefs’ that drive people towards important pursuits in their life and also the day-to-day actions. People take pride in them and celebrate the practice of values.

- Trust: Earnunquestionable trust of all stakeholders in every action by demonstrating both transparency and fairness in all dealings
- Value: Add value to the organization and its stakeholders in every action and with a focus on simplification.
- Exactness: Being fact based, accurate and precise in all words and deeds; to shun ambiguity. Meticulous adherence to standards and compliance with processes.
- Curiosity to learn: The bedrock value for continuous improvement by updating the knowledge and skills. Using mistakes as opportunities to learn and grow.

Traits, Motives and Attitude for roles

	CAD Engineer	Proving Engineer	Team Leader
TRAITS	Rigor – Commitment to purpose, Self discipline, Attention to details, Decisive, Sociability – Influencing, Collaboration Idea orientation – Imagination, Ideation, Visualization Abstract Reasoning Flexibility – adaptability, openness to change	Rigor – Commitment to purpose, Self discipline, Attention to details. Decisive, Sociability – Inclusion, Belongingness, Influencing and Collaboration, Idea orientation – Visualization, Adaptability, Ideation, Abstract reasoning Flexibility - Adaptability, Openness to change	Rigor – Commitment to purpose, Self discipline, Eye for abnormality, Compliance, Decisive Sociability – Inclusion, empathy Urgency- Speed Influencing - Assertiveness
MOTIVES	Achievement	Achievement	Achievement Affiliation
VALUES	Trust Exactness Learning (curiosity)	Trust Exactness Learning (curiosity)	Trust Exactness Learning (curiosity)

A.4.6 TOOLS USED FOR ASSESSMENT OF INNATE ABILITIES

(A) **Aptitude tests or potential ability tests** are used to measure the latent ability of a candidate to learn new job or skill relevant for the roles of the organization. These tests primarily detect peculiarities, strengths and deficiencies in a person's sensory or intellectual capacity. Speed, perception, comprehension, interpretation, extrapolating, relating and accuracy are the essence of these tests. The basic source of these instruments are Guilford's "structure-of-intellect (SI)" model (1967). Within the theory of this model, intelligence is defined as a systematic collection of abilities or functions for processing different kinds of information in various ways. As mind receives, records and processes the perceived information in symbolic forms and geometrical formulations, the instruments for intellect were chosen to comprise pictures. The symbolic records (pictures) of questions drives the mind on to the process of contents rather than on the memory-recall track. "What happens in mind is information and how it happens is thinking". The potential of mind is better manifested and identified through "thinking" – the process in the 'here and now'. This method obviates the language differences and difficulties. Some of the instruments that have been used are:

Perceptual Speed: The essence of this questionnaire is perceiving the similarities and deciding the identity. This tool of intellectual/ psychic assessment refers to the act of comparing detailed visual figures and deciding in very limited time (5 to 7 minutes) whether they are the same or different. This is called as evaluation of visual units. Evaluation implies more than identification, but includes other criteria, such as consistency, suitability or belongingness. The score on this instrument as weighted has been used for rating :

- Under “Rigour” the factors of decision-making & perseverance; Attention to details; compliance (conforming to similarity with standards).
- Under “Abstract Reasoning” the factor of ‘correlating cause and effect’ – conceptualizing the consequence of an action.
- Under “Urgency” the factor of ‘speed of response’ – instantaneous response to solve and resolve problems; escalate, seek remedy and restore normalcy.
- Under “values” the factor of ‘exactness’- to be fact-based, accurate and precise in deeds – an aptitude for meticulous adherence to standards. The psychic assumption is that the behavioural manifestation indicates honouring all commitments.

The weightages are given based on the other validating instruments, other tools, exercises, or the Behavioral Event Interview.

Analytical Differentiation: The essence of this instrument is perceiving and differentiating an item from the other pictures in the lot of 5 items. This is what popularly called as ‘odd man out’. The act of identifying the uniqueness (the difference in structural quality) of a visual figure from others in the group with speed and accuracy is the basis of rating :

- Under “Rigour”, the factor of ‘eye for abnormality ’ which is the ability to differentiate;
- Under “urgency”, the factor of ‘sensing’ which is explained as vigilantly looking for deprivation or difficulties, emergencies;

- Under “Diagnosing”, observing the difficulties, perceiving the symptoms, looking for clues and identifying possibilities;
- Under “Values”, the factor of ‘Exactness’ – to be fact-based, accurate and precise in deeds – an aptitude for meticulous adherence to standards. Psychologically, the presumption is about discretion for relevant conformation to be honest.

The weightages are given based on the other validating instruments, other tools, exercises, or the Behavioral Event Interview.

Logical Problem Solving: This method of testing is called by Guilford etl as ‘Cognitive of semantic systems’. As an item of information, a system is an organized combination of three or more units, with their unique interrelations. The understanding of the nature of a problem concerned in semantic terms depends on this ability, as in arithmetical reasoning. The problem is conceived as a structure in which the answer is missing and the system is to be completed. Completing the system depends on inner ability to connect mentally the units (individual pictures) and identify in the answering options the fitting part for the missing space in the question (stem) picture (unit) or sequentially appraise the logical next unit (picture). The score on this instrument as weighted has been used for rating :

- Under “Abstract Reasoning” the factor of ‘correlating cause and effect’ – conceptualizing the consequence of an action.
- Under “Diagnosing”, observing the difficulties, Sequencing and organizing, perceiving the symptoms, looking for clues and identifying possibilities;
- Under “Motives”, the need for ‘Achievement’ – seeing sequential possibilities and pursuing effort towards the goal as identified.

The weightages are given based on the other validating instruments, other tools, exercises, or the Behavioral Event Interview.

General Reasoning: The contents of the questionnaire are in the form of shapes to find an outcome, or arithmetical problems, or described problems such as riddles that has single right solutions (answers). These have a teaser impact on the process of thinking. The solution finding is embedded in the ability to conceptualize, theorize or abstraction through reasoning. Stress and resilience will be an alternating process through the reasoning exercise on different units in the questionnaire. The score on this instrument as weighted has been used for rating :

- Under “Rigour”, the factor of ‘Decisiveness’ – decision making with perseverance, ‘eye for abnormality’ which is the ability to differentiate; and ‘Compliance’ – meticulous spirit to follow norms, rules, systems.
- Under “Abstract Reasoning” the factor of ‘Theorizing and recognizing patterns’ – conceptualizing the experience in whole.
- Under “Motives”, the need for ‘Achievement’ – seeing sequential possibilities and pursuing effort towards the goal as identified.

The weightages are given based on the other validating instruments, other tools, exercises, or the Behavioral Event Interview.

Spatial Orientation : This questionnaire comprises of picture units which has two objects in relationship as it requires identification of the picture unit which correctly indicates the movement one object (boat, for example) with reference to another object (for example, tree). This ability is referred to as cognitive of visual systems. This is perception of the arrangements of items of

visual information in space. It involves more than an ability to perceive relations between visual objects, it requires interrelationships (visual relations) between two objects while moving in directions on space relatedness viz; larger than, above, sides, inside of etc. The score on this instrument as weighted has been used for rating :

- Under “Rigour” the factor of ‘Attention to details’; compliance (conforming to matching with expectations and standards), ‘eye for abnormality’ which is the ability to differentiate the locational space differences dynamically.
- Under “Abstract reasoning” the factor of ‘synthesizing’ – organizing and coordinating things to make it a meaningful ‘whole’ with reference space and matter.
- Under “urgency”, the factor of ‘sensing’ which is vigilantly looking for non-deviated movements and locations or emergencies with reference to matters and locations (space); another factor is ‘speed of reference’ – action in emergent situations.
- Under “Diagnosing”, the clues for correction of movements and identifying possibilities.
- Under “values”, the factor of ‘exactness’ - accurate and precise in performance – an aptitude for meticulous adherence to dynamic states. Psychologically, the presumption is about commitment to be honest.

The weightages are given based on the other validating instruments, other tools, exercises, or the Behavioural Event Interview.

EQ Tests (Daniel Goldman, Cartel, and Will Schultz): The EQ Test, FIRO-B and Emotional Awareness Questionnaires are used for EQ scoring. These are used as required individually or in combination. The factors are : Inclusion, and Affection scores from FIRO-B ; EQ Test for Emotional intelligence; Emotional Awareness Questionnaire for the factors, Self-controlled, Emotionally Stable, Suspicious / trusting, Apprehensive / Self-assured, Tense / Relaxed; From Cartell's 16 PF, Warmth, Liveliness, Emotional Stability, Sensitivity, Privateness. The score on this instrument as weighted has been used for rating :

- Under “Sociability”, the factors, ‘inclusion’, ‘collaboration’ and ‘Empathy’.
- Under “Motives”, the factor of ‘Affiliation’ motive – strong desire to be with people, may be intimacy with a few or many.

The weightages are given based on the other validating instruments, other tools, exercises, or the Behavioral Event Interview. These scores and deductions are confirmed or disconfirmed in group activities and Behavioral Event Interview. The sociability and affiliation motive are more effectively observed and assessed through personal inter-face or interactive group tasks / discussions. The instrumented scores provide the base for observation or engaging in dialogue.

Divergent Thinking and Imagination : Tests or exercises that are simple and at the same time drawing responses from the participants to draw indicative measures for innovation, creativity and lateral thinking aspects, are also included in the battery of assessments. Two of them are: **“Connect Numbers & Link chains”** and **“Drawing from shapes”**. All these paper exercises and the contents are figures that may be pictures, or numbers. The exercise of connecting numbers asks the participants to connect the pairing

numbers (same numbers) arranged in challenging positions and limitations so that they have to find novel (unusual) way of drawing lines to connect all of the pairs. Connecting the links to make a chain with minimum welding is also draws the participants' orientation to think (imagine) laterally. Drawing from shapes is an exercise of extending into variety of drawing pictures from the usual geometric shapes. For example, how a variety is generated from a set of five circles or triangles etc. These are used to elicit the following factors of traits.

- Under “Idea Orientation” the factor of ‘Imagination’: Anticipatory thinking, identifying possibilities, capturing the relatedness.
- Another factor is ‘visualization’: Dreaming, Seeing the desired end-state, holistic synthesizing of the problem on hand.
- One more factor is ‘ideation’: Fluency, speedy generating of ideas, Storming the thought process and generating new approaches.
- Under “Abstract Reasoning” the factor of ‘generalizing for application’ and conceptualizing the outcome.
- Under “Flexibility” the factor of ‘Adaptability’ - accepting a new idea and experiment, reflecting and receiving variety of thoughts that are different and trying out those new approaches.

A.4.7 TOOLS USED FOR ASSESSMENT OF INNATE ABILITIES

(B) Experiential interventions for assessment are organized as part of the Assessment Centre of selection. These activities are designed as individual task or group work. Individual activities are in the form of exercises or games. Group work is in the form of group discussions (Theme based) or group tasks such as collage making on a theme. For example, the group activity (Game) of “Collage making” of a monument designed and collectively executed and “NASA”, the group exercise of discussing to arrive at consensus on the priorities of 15 items in a critical situation. The group processes and individual roles and behaviours are observed with a process focus by a panel of three trained observers. The rating is significant to assess the following factors:

- (i) “Collage making” : The traits and factors elicited are:
 - Under “Sociability”, the factors, ‘inclusion’, Belongingness and ‘collaboration’ – Paying attention to a person and treating him as important; Willingness to join others on tasks, particularly in difficult situations; supporting others in activities, complementing and adding value for contribution.
 - Under “Idea Orientation” the factor of ‘Imagination’: Anticipatory thinking, identifying possibilities, capturing the relatedness.
 - Another factor is ‘visualization’: Dreaming, Seeing the desired end-state, holistic synthesizing of the problem on hand.

- One more factor is ‘ideation’: Fluency, speedy generating of ideas, Storming the thought process and generating new approaches.
- Under “Flexibility” the factor of ‘Adaptability’ - accepting a new idea and experiment, reflecting and receiving variety of thoughts that are different and trying out those new approaches. Another is ‘openness to change’ – sensitivity to environment and responding appropriately.
- Under “Influencing”, the factors of ‘Persuading’, ‘Assertiveness’, and ‘Expressing’. Making others to accept one’s ideas and implement the idea in action. Standing for one’s values, stating with assurance one’s commitment to own view. Communicating with feeling, thrust and involvement.
- Under “Motive” the factor of ‘Achievement’ – Strong desire to reach the goal with total perseverance without giving up till the end.

(ii) Group Discussion (NASA): The traits and factors elicited are:

- Under “Sociability”, the factor, Belongingness –Willingness to join others on tasks, particularly in difficult situations; supporting others in activities.
- Under “Abstract Reasoning” the factor of ‘Theorizing and recognizing patterns’ – conceptualizing the experience in whole.
- Under “Abstract Reasoning” the factor of ‘generalizing for application’ and conceptualizing the outcome.
- Under “Influencing”, the factors of ‘Persuading’, ‘Assertiveness’, and ‘Expressing’. Making others to accept

one's ideas and implement the idea in action. Standing for one's values, stating with assurance one's commitment to own view. Communicating with feeling, thrust and involvement.

- Under “Values” the factor of ‘curiosity to learn’. Strong desire to learn continually for personal effectiveness by listening, checking with peers and seeking clarifications. Connecting one's experience and stating about the outcome and linkages to established theories.

C) ‘Behavioural Event Interview’ is conducted by a panel of trained and experienced in-house resource persons. This is an interface with a candidate encouraging him to share his success stories. By listening to his experiences and by positive probing the panel understands the potential of the candidate. This process of “appreciative inquiry” is non-threatening to the candidate and helps to elicit his behavioural traits, efforts, motivation and values. “Traits, Motivation, Value” related fitness (suitability) can be captured through “BEI”. The technique is based on the assumption that past performance is a key indicator to future performance. It consists of asking specific positive questions that require the candidate to give an example of rewarding effort from past experience, which illustrates how they behaved in a particular challenging situation which led them to a successful state. This will give evidence of the behaviour sought as well as how the person went about it. The answers are likely to be more candid, more honest and real because the person is asked to be specific and chunking up for his / her narrating the experience as a story. The process is “appreciative Inquiry” . For Behavioural Event Interview, the experiential positive stories and the ‘positive probing’ are useful to engage in dialogues appreciatively – with all the three meanings of ‘appreciation’ viz; an understanding of traits, encouraging (eliciting positive commitment for action) and adding value to the person's self-worth.

BEI – Guidelines

Indicative Questions

- **When you prepare for your exam how do you schedule your day?**
 - o How do you ensure you stick to your schedule?
 - o What happens when you over shoot your schedule? How do you catch up?
 - o What are your two strengths that enable you to remain committed and disciplined to your schedule?
- **Tell me about a situation where you remained committed to a purpose where others in the group changed their stance.**
 - o What was the situation?
 - o What enabled you to stay committed?
 - o What was the result?
 - **Describe a typical day for you**
 - o How do you balance between studies and play?

Below Expectations	Meets Expectations	Exceeds Expectations
• Prepares a rigorous and detailed schedule but is unable to stick to it • Gets easily influenced without logic and changes his stance • Has minimal orientation towards details and may not be able to prioritize effectively	• Rigorously follows the prepared schedule and uses mechanisms to ensure he / she abides by it • Is committed to a purpose and disciplined to achieve the objective • Is likely to get into details and prioritize effectively before executing routine tasks	• Is conscientious and rigorously follows through his / her schedule. Motivates self for achieving higher results • Follows thru his commitment even in difficult circumstances and achieves results by rigorous self discipline • Meticulously plans and details out task; prioritizes them and delivers results

Annexure – 4.9

		15 min (incl. instruction & administration 30 min)	55 min (incl. instruction & administration 60 min)	10 min	10 min	10 min	1.30 hour	1 hour	1 day
		7 min	4 min	4 min	30 min	25 min	10 min	10 min	1 hour
		1A	1A	1A	1A	1A	1A	1A	1A
Rogur	1 Commitment to purpose – goal orientation, achievement orientation								
	2 Decisive – decision making plus perseverance	10	10	20	40	20		40	
	3.1 Attention to details – data gathering, information gathering, sharp focus/ macro data perception	60			40				
	3.2 Self discipline – willingness to sacrifice, withstanding criticism					20		20	
	4.1 Eye for abnormality – ability to differentiate		40		30	30			60
Sociality	4.2 Compliance – meticulous spirit to follow norms, rules, systems	50			20	30			
	1 Inclusion – paying attention to a person and treating him as important						50	50	
Idea	2 Belongingness – willingness to join others on tasks particularly in challenging situations							60	
	3 Collaboration – supporting and complementing, adding value						50	50	
	4 Empathy – sensing the difficulties of others, concern for others difficulties, being in shoes of others, intimacy, identifying possibilities, capturing the desired end state, holistic						60		40
	2 Visualisation – discerning, seeing the desired end state, holistic						30	30	40
Abstract Reasoning	3 Ideation – fluency and generating new approaches						30	30	40
	1 Synthesizing – organizing and coordinating things together, (observation step of problem solving)					50		50	
	2 Correlating – comparing, relating cause and effect	30		70					
	3 Theorising and recognising patterns –			30	40	30			
Flexibility	4 Generalising for application				20	20		20	
	1 Adaptability – accepting a new idea and experiment, listen, try out new ideas							50	50
Urgency	2 Openness to change – sensitive to environment and appropriate response, willingness								60
	1 Sensing – vigilantly looking for deprivation or difficulties, emergencies		80						40
	2 Speed of response – instantaneous response to solve or restore situation or escalate and seek remedy	60			40				
	1 Persuading – making others to accept & implement ones idea				30	20		50	
Diagnosing	2 Assentiveness – standing for ones values, views, expressing a point of view					20		50	30
	3 Expressing – communicating along with feeling, threat, involvement						20	50	30
Motives	Observing the difficulties, perceiving the symptoms, looking for clues and identifying possibilities		30	20		50			
	Achievement - strong desire to reach the goal with total perseverance; never-say-die attitude			30				40	
Values	Affiliation -strong desire to be with people						40		60
	Trust - To earn the unquestionable trust of all stakeholders in every action by demonstrating both transparency and fairness in all dealings								100
	Value - To add value to the Company and its stakeholders in every action and focus on simplification. No action should be taken for the sake of expediting bureaucracy								100
	Exactness - To honour all commitments, to be fact based, accurate and precise in all words and deeds, to shun ambiguity. Meticulous adherence to standards and compliance with processes	40	40		20				
	Curiosity to learn - strong desire to learn continuously for personal effectiveness by correlating one's experiential outcomes and established theories / concepts						10	20	50
								20	20

Annexure – 4.10

Innate ability scores vs Roles of people

S. No	Reg No	TRAITS DURING SELECTION								ROLE FROM STANDARD MAP				Allocated Role
		Rigour	Idea Orientation	Abstract Reasoning	Diagnosing	Flexibility	Influencing	Sociability	Urgency	Part Design Engineer (PDE)	Testing Engineer (TE)	Proving Engineer (PE)	Team Leader (TL)	
1	10G09	75.3	56.0	66.0	93.0	76.0	50.0	50.8	80.5	YES		YES		SE
2	10G13	56.3	18.0	57.0	81.0	40.0	41.7	48.5	73.5		YES		YES	TE
3	10G15	61.3	24.0	50.0	69.0	59.0	38.3	53.3	64.5			YES		PE
4	10G16	58.3	30.0	45.3	70.0	52.5	36.7	50.8	64.0		YES	YES		PE
5	10G23	59.2	41.0	56.5	69.0	62.5	65.0	65.8	62.5				YES	TL
6	10G30	63.3	50.0	55.8	58.0	56.5	55.0	50.3	68.0			YES	YES	PE
7	10G32	63.2	64.0	59.8	62.0	69.0	80.0	65.5	51.5	YES	YES	YES	YES	PDE
8	10G64	62.2	69.0	53.8	74.0	57.5	40.0	48.0	69.0	YES		YES		TE
9	10G76	59.8	43.0	56.0	56.0	62.5	70.0	58.0	52.5			YES	YES	PE
10	10G84	71.8	61.0	69.5	83.0	73.5	80.0	63.3	77.5	YES	YES	YES	YES	PF
11	10G90	63.3	75.0	78.0	72.0	62.5	80.0	50.3	63.0	YES	YES	YES		PDE
12	10G96	66.3	41.7	62.3	85.0	57.5	40.0	40.5	81.0	YES				PDE
13	10G99	63.3	59.0	54.5	68.0	61.5	36.7	49.5	68.5	YES				PDE
14	10G100	55.5	53.0	60.3	60.0	62.5	60.0	52.8	58.0			YES		TE
15	10G101	54.5	62.0	60.5	59.0	55.0	50.0	47.5	55.0	YES		YES		PDE
16	10G102	54.7	70.0	55.3	69.0	46.0	61.7	52.8	61.0	YES			YES	SE
17	10G105	58.7	50.0	60.0	85.0	64.0	40.0	49.5	81.0			YES	YES	SE
18	10G114	63.2	56.7	79.3	80.0	64.0	45.0	58.8	81.5	YES	YES	YES	YES	PDE

Assessment tools Vs Traits, Motives and Attitude

	CAD Engineer / Design Engineer	Proving/Process /Facilities planning engineer	Quality engineer/ QA Engineer	Development Engineer	Testing Engineer/Testing Analyst -	Team Leader/Group Leader	QC Engineer - Operations	Territory Manager - Service
Traits	Rigor- Commitment to purpose , Decisive (H)	Rigor- Commitment to purpose , Decisive (H)	Rigor- Commitment to purpose , Decisive (H)	Rigor- Commitment to purpose , Decisive (H)	Rigor- Commitment to purpose , Decisive (H)	Rigor- Commitment to purpose , Decisive (H)	Rigor- Commitment to purpose , Decisive (H)	Rigor- Commitment to purpose , Decisive (H)
	Rigour Attention to detail, Self discipline (H)	Rigor- Attention to detail, Self discipline (H)	Rigor- Attention to detail, Self discipline (H)	Rigor- Attention to detail, Self discipline (H)	Rigor- Eye for abnormality, Compliance (H)	Rigor- Eye for abnormality, Compliance (H)	Rigor- Eye for abnormality, Compliance (H)	Rigor- Eye for abnormality, Compliance (H)
	Sociability (M)	Sociability (M)	Sociability (M)	Sociability (H)	Sociability (M)	Sociability(H)	Sociability(M)	Sociability (H)
	Idea orientation (H)	Idea orientation (M)	Idea orientation (M)	Idea orientation (M)				Idea orientation (M)
	Abstract reasoning (H)	Abstract reasoning (M)	Abstract reasoning (M)	Abstract reasoning (M)	Diagnosing (H)		Diagnosing (M)	Diagnosing (H)
	Flexibility (M)	Flexibility (H)	Flexibility (M)					Flexibility (M)
				Influencing(H)		Influencing (H)	Influencing (M)	Influencing (H)
						Urgency (H)	Urgency (H)	Urgency (H)
MOTIVES	Achievement (H)	Achievement (H)	Achievement (H)	Achievement (H)	Achievement (H)	Achievement (H) Affiliation (H)	Achievement (H)	Achievement (H) Affiliation (H)
VALUES	Trust (H) Exactness Learning (curiosity)	Trust (H) Exactness Learning (curiosity)	Trust (H) Exactness Learning (curiosity)	Trust (H) Exactness Learning (curiosity)	Trust (H) Exactness Learning (curiosity)	Trust (H) Exactness Learning (curiosity)	Trust (H) Exactness Learning (curiosity)	Trust (H) Exactness Learning (curiosity)

Innate ability scores vs Roles of people

Join BE course only if you have the aptitude for it, court tells students

'Do not take up technical course to please parents, or due to peer pressure'

Special Correspondent

BANGALORE: The Karnataka High Court has described as distressing the fact that 30,000 BE students have failed in their semester examinations this year. The court advised the students that they should not join the technical course due to peer pressure or to please their parents, but do so only if they have an aptitude for it.

In its verdict, while setting aside a single judge Bench's direction to Visvesvaraya Technological University (VTU) to conduct supplementary examination for students who have failed in semester examination, a Division Bench comprising Chief Justice Vikramajit Sen and Justice B.V. Nagarathna said: "We wish to remind the students that to study a technical course, they must have the requisite aptitude."

"Many times lack of aptitude for a course of study or

- Court expresses concern over 'burdensome, illogical' stipulation of attendance by VTU
- 'We would have expected VTU to reach out to their students and redress their problems'

admission to a course against the wishes of the student concerned may make him uninterested and it may be another reason for lack of attendance," the court said. It advised the parents to ensure that their wards have the requisite aptitude to take up a technical course. The Bench went on to say that it can only articulate its concern in the hope that it will not fall on deaf ears.

Attendance issue

The Bench expressed concern over the "extremely burdensome, perhaps illogical", stipulation of attendance, which ordains that lack of attendance in one subject will lead to disqualification for the

entire semester and thereby may result in wasting of one valuable year.

The Bench said that it did not expect VTU to remain impervious to and unperturbed by failure of large number of BE students to pass semester examination. "We would have expected VTU to act in the spirit of *loco tutoris* if not in *loco parentis* to reach out to their students and redress or remedy their problems..."

The Bench observed that failure of a large number of students to pass in all examinations may be attributed to the fact that the BE course, which used to be of five-year duration has now been reduced to four. Or, it could be because of drop in quality of

instruction in VTU; or on account of lack of care by the faculty of VTU. The Bench advised VTU to ensure that coaching in its affiliated colleges is of high quality and the problems of the students are redressed. The Division Bench observed that there are a plethora of engineering colleges in Karnataka and many lack basic infrastructure. Steps should be taken to ensure that engineering colleges have good teachers to impart quality education. Besides that, authorities concerned must ensure that teachers are also continuously assessed. The court also took note of the fact that the All-India Council for Technical Education, in certain cases, grants or continues affiliation to colleges lacking facilities, and students admitted to such institutions would suffer and this may be a contributing factor for their inability to clear the semester examination.