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Need of Quality Research for improving Higher Technical Education

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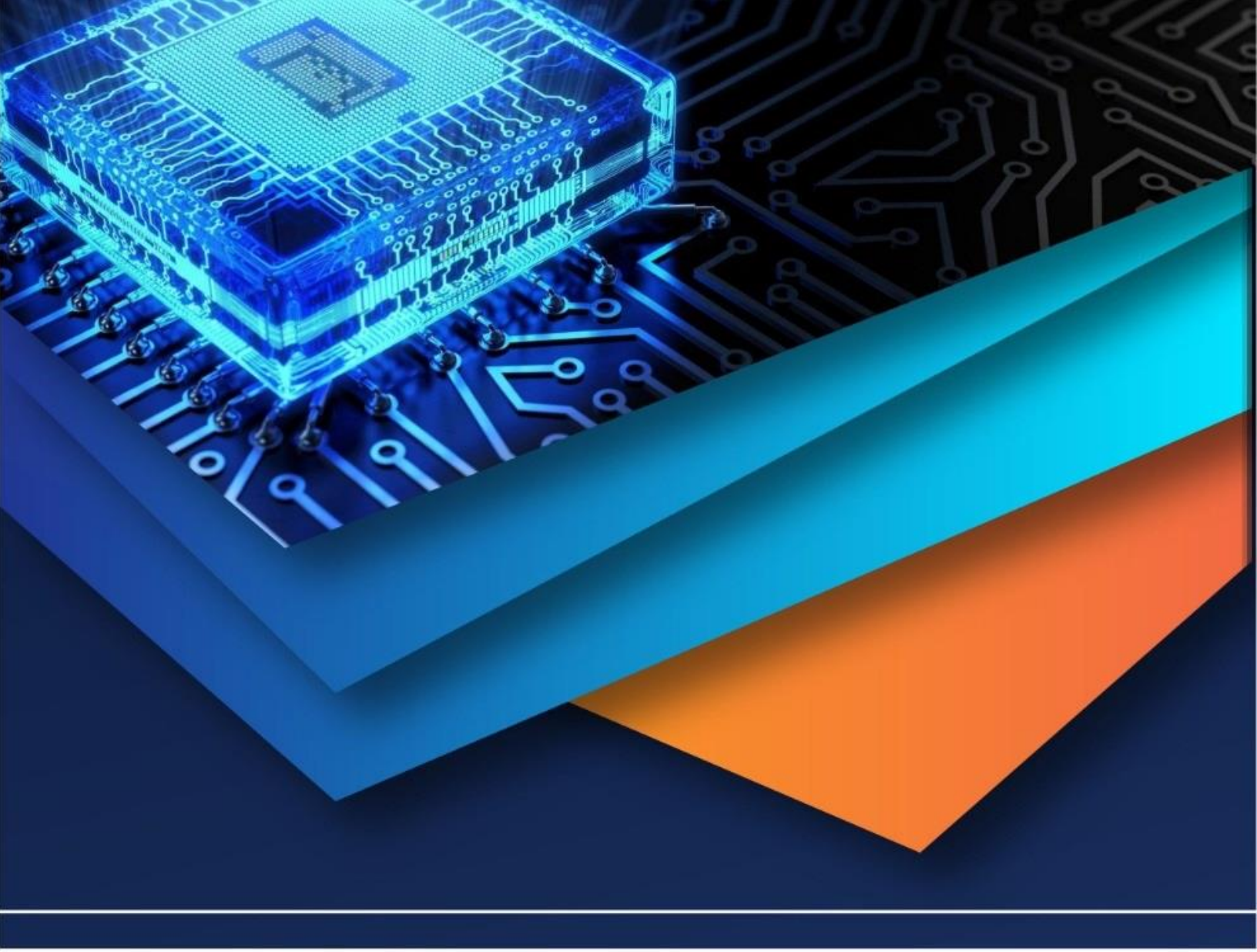
The number of private colleges has increased tremendously in the last 15 years due to shortage of government aided colleges and due to the large demand of engineers and technical personals in private and public sectors. In most of the private engineering colleges with few exceptions, the faculty with graduate qualification is allowed to teach the engineering graduates, where as in US, UK, Japan and other countries a Ph.D. Degree is a must for teaching the undergraduate classes. The assistant professor, associate professor and professor all have Ph.D. degrees in relevant disciplines.

It is not because the private technical institutions in India do not want to employ the Ph.D. degree holders but they find lot of difficulty in finding Ph.D. in engineering for their work. The situation in applied science disciplines i.e. physics, chemistry and mathematics is slightly better. It is also difficult to find good quality PhDs in English.
If we take no. of technical institutions as 3000 and average no. of students 1500 in all the 4 years of engineering classes, we need 100 faculty members per institute and 3 Lakh PhDs to cater the demand. This demand is further increasing because many foreign institutions are also opening their R&D centers in India in order to tape the PhDs as the cost of hiring them here will be much less than in their own country. General Electric, Motorola, IBM, Texas Instruments, Intel, Microsoft, Yahoo, Dupont, Monsanto, Dow Chemicals are some of such companies.

It takes about 4-5 years to churn a student in R&D in order to earn a Ph.D. degree and that means even if we start at a large scale at this juncture, the results will be seen only after a gap of 4-5 years. How to tackle this problem of producing good quality PhDs in engineering discipline is a Herculean task and the beginning has to be done fast and the pace has to be faster. IITs, NITs, IIITs, IISc, NITTTRs are making efforts in this direction. The problem with PhDs produced in IITs is that of brain - drain i.e. most of the PhD students find post - doc fellowships in

various countries and they are not easily available for private engineering colleges. The other R&D institutions such as CSIR, DRDO, ISRO are producing very good quality PhDs but they themselves are in dire need of PhDs for their work as the manpower which was recruited at the beginning has almost retired or at the verge of retirement and hence a lot more has to be done in this direction by these institutions and the best way would be to form a joint collaboration with universities or institutions of higher education.

The engineering colleges and universities also have to increase their infrastructure to facilitate R&D activities in the engineering disciplines. Some of these institutes already have senior faculty members having both teaching and R&D experience; their expertise may be utilized for seeding the R&D facilities in the institutes. This may be done with the help of funding by Government Institutions such as AICTE, UGC, DST, DRDO etc. for setting up R&D infrastructure in private institutions. This would help in churning out some good masters and PhD degree holders. Another possible way is to provide good financial support to the existing faculty as most of the fellowships for PhD are for single researchers, but the experienced faculty will be having spouse and may be a child too. This would require more amount of fellowship for their family needs during PhD tenure. The government can help in this regard by increasing the fellowship amount for faculty based on their teaching experience. A message should go to the faculty that they will be having good support during their PhD tenure. One may think that once the faculty goes for pursuing PhD would not come back to the same college, it is immaterial, he would join some other institute but that institute would have the better qualified staff and on the national level that is what we need. Another problem associated with doing PhD is the university registration process. The registration norms for teachers should be different as they already would have teaching experience and that should be counted for their registration for PhD. We have to take this as a drive in which establishing good R&D centers and utilize the highly experienced faculty must be a priority. This would certainly produce more and more quality PhDs at a faster rate. It is well known that a faculty with PhD will be more exposed to the recent advances in various fields of engineering and technology and that would help him in teaching the students in much better way resulting in quality education in our engineering institutes. This would not only improve higher technical education but also help in establishing good theoretical as well as experimental R&D facilities in the institutions where they would be working.



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