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एकीकृत मुख्यालय (सेना)
नई दिल्ली-110 011
Directorate General of
Perspective Planning
General Staff Branch
Integrated HQ of MoD (Army)
New Delhi - 110 011

012157/GS/PP/ADB/Academia

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Prof V Ramgopal Rao
Director, IIT, Delhi, Hauz Khas,
New Delhi - 110016

ALLOTMENT OF PROJECTS TO INDIAN ARMY OFFICERS
UNDERGOING M TECH PROJECTS

Dear Prof Rao,

1. As you are well aware, number of Indian Army Officers enroll for higher education courses like M Tech etc in your prestigious institute. The service provided by your institute for imparting higher technical knowledge to the officers of Indian Army is indeed praiseworthy and is well appreciated by Indian Army. The knowledge gained by the officers has added immense value to the organization.

2. Army Design Bureau has now been raised to act as interface between Industry, Academia and Army. We would like to further align the knowledge gained by the officers towards Indian Army capability development. I am enclosing certain niche technologies identified by the Indian Army for future military technology development. I would request you to allot projects to the Indian Army Officers undergoing M Tech at your institute accordingly. Also, any promising research paper may be forwarded to us for consideration under Army Technology Board, through which Indian Army can finance Research & Development activities.

3. I am sanguine that you would assist in this endeavour for optimal utilisation of tech knowledge for nation building and would guide the officers undergoing M Tech in your institute towards finding practical & innovative products for Indian Defence Forces, thereby enhancing national security.

→ Dean (Acad) for n.a.

Ramgopal Rao

→ Dean (R&D)

With warm regards,
Yours sincerely,
Johua

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18/12

AFVs

1. Automotive System: Diesel and Turbines.
2. Tracks and Suspension System.
3. Survivability.
4. Survivability in Urban Environment.
5. Signature Management.
6. Armour Protection.
7. Material.
8. Soft Kill Sensors.
9. Hard Kill Systems.
10. Electric Weapons.
11. Tank-fired Missiles.
12. 3rd Generation Anti Tank Guided Missile (ATGM).
13. Fire Control System (FCS).
14. 3rd Generation TI Sights.

NIGHT VISION & POWER PACKS / ENGINES

Night Vision Technology

15. Military Exploitation of Contemporary II Technology.
16. Cooled TI Technology.
17. Uncooled TI Technology.
18. Fused Imagery Technology.

Power Packs / Engines

19. Downsizing and Turbo Charging.
20. Advanced Combustion Modes.
21. Hybrid Engines for Armoured Fighting Vehicles(AFV).

COMBAT SOLDIER

22. Lethality.
23. Survivability.
24. Mobility.
25. Situational Awareness.
26. Sustainability.

ARTILLERY

Guns

27. Range.
28. Rate of Fire.
29. Lethality.
30. Accuracy & Response Time.
31. Survivability.

Ammunition System

- 32. Terminally Guided Munitions (TGMs).
- 33. Sensor Fuzed Munitions (SFM).
- 34. Trajectory Correctable Munitions.
- 35. Course Correctable Fuze (CCF).
- 35. Bi-Modular Charge System (BMCS).

Surveillance and Targeting Systems

- 36. UAVs/ UCAVs.
- 37. **Micro / Nano UAVs**
 - (a) Close-In Covert Autonomous Disposable Aircraft (CICADA).
 - (b) Personal Reconnaissance System.
 - (c) Battlefield Surveillance and Weapon Locating Radars.
 - (d) Positioning and Targeting.

Rocket and Missile Technology

- 38. Rocket Systems.
- 39. Missile Systems.

COMBAT ENGINEERS: FUTURE TECHNOLOGIES40. **Metallurgy.**

- (a) Composite Materials.
- (b) Aluminum Alloys.

41. **Bridging System**

- (a) Mechanical Bridging System.
- (b) Manual Bridging System.
- (c) Aerial Cable Ways
- (d) Heliportable Bridging System.

42. **Mine Breaching.**

- (a) Mine Protection Shoes.
- (b) Influence Mine Breaching System.
- (c) Vehicle Mounted Mine Detection System (VMMDS)

43. **Mine Laying**

- (a) Mechanical Mine Layer(MML).
- (b) Vehicle Based Mine Scattering System.
- (c) Automated Mine Field Recording System.

44. Camouflage & Deception

- (a) Sign Management & Stealth Technical.
- (b) Dynamic Camouflage Battle Suits.
- (c) Multi Spectral Camouflage Net (MSCN).

45. Water Supply

- (a) High Head Water Pumps.
- (b) Water Purification System.
- (c) Desalination Plants.

46. Liquid Soil Stabilizer.

47. Air Cushion Vehicles (ACVs).

48. Mobilisation Decontamination System.

INFORMATION AND COMMUNICATION TECHNOLOGY

Radios

- 49. Smart Phones
- 50. Satellite Based Communication Devices.
- 51. Optical Fibre.
- 52. Integration.
- 53. Social Media Analytics.
- 54. Application Development.
- 55. Operating Systems.
- 56. Basic Electronic Devices
- 57. Cloud Computing.
- 58. Data Analytics
- 59. Quantum Computing and Communications.
- 60. Cryptography.
- 61. Communication Media.
- 62. Artificial Intelligence.
- 63. Electronic Warfare.

ARMY AIR DEFENCE

Missile Propulsion and Guidance

64. Surface to Air Missile (SAM) Systems.

- (a) Propulsion System.
- (b) Guidance, Seeker and Control Technologies.
- (c) Warhead

65. Sensors.

- (a) Multifunction Phased Array Radars.
- (b) Synthetic Aperture Radars (SAR).
- (c) Millimeter Wave Rdr (MWR).
- (d) Transmitters.

66. Directed Energy Weapons (DEW).

- (a) Anti UAV Weapon.
- (b) Precision Weapons and Dazzlers.

ARMY AVIATION

- 67. Aircrafts in General.
- 68. Helicopter Performance.
- 69. Weapon Systems.
- 70. Battlefield Survivability.
- 71. Man Machine Interface.
- 72. Autopilot System.
- 73. Flight Controls.
- 74. Avionic and Display Systems.
- 75. Communication Systems.
- 76. Surveillance System.
- 77. Navigation Systems.
- 78. All Weather Day and Night Capability.
- 79. Engine.
- 80. Advanced Structural Systems.
- 81. Safety Features. (crashworthy features)
- 82. Maintenance and Reliability.
- 83. Simulators Training.
- 84. Light / Medium Multi-Role Helicopters.
 - (a) Utility and Troop Transportation.
 - (b) Fire Support.
- 85. Armed Reconnaissance and Surveillance.
- 86. Attack Helicopters.
- 87. Electronic Warfare Helicopters.
- 88. Weapon Systems.
- 89. Battlefield Survivability.
- 90. Stealth.
- 91. Means to Avoid Being Hit (If Seen).
- 92. CROSSHAIRS.
- 93. Man Machine Interface.
- 94. Automatic Flight Control System (AFCS).
- 95. Flight Controls.
- 96. Avionics and Display System.
- 97. Communications.

Surveillance Systems

98. Integrated Reconnaissance and Surveillance System.

Navigation Systems

99. Navigation.

All Weather Day and Night Capability

100. Collision Avoidance Systems.
101. Power Plant.

Advanced Structural Systems

102. Airframe.
103. Signature Management and Stealth Technology.