GP

INDIAN INSTITUTE OF TECHNOLOGY, KHARAGPUR

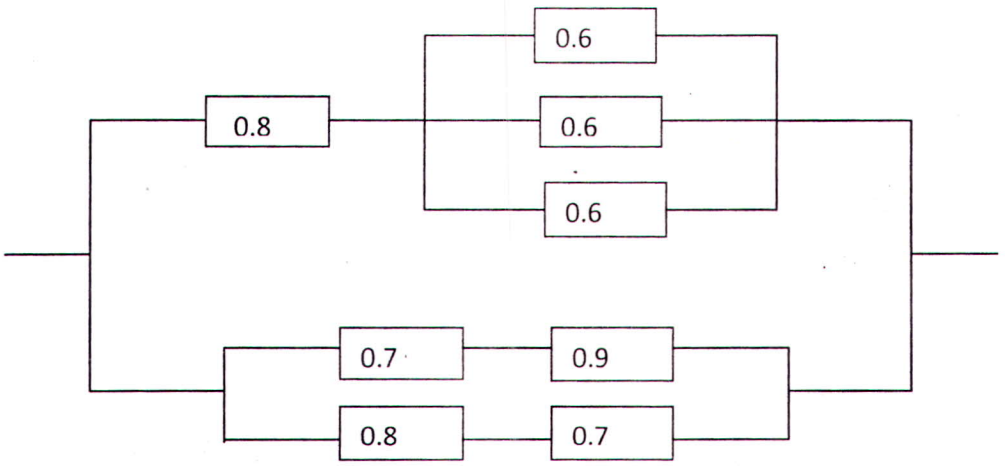
Date:_____FN/AN, Time: 2 Hrs., Full Marks: 30, Deptt: Rajendra Mishra School of Engineering Entrepreneurship, No. of Students: 66, Mid Autumn Semester Examination, Sub. No. EP60022, Sub Name: Technology Entrepreneurship, _____Yr. B.Tech.(H) / B.Arch.(H) / M.Sc. / M.Tech(Dual)

Instruction: Please write in brief and to the point.

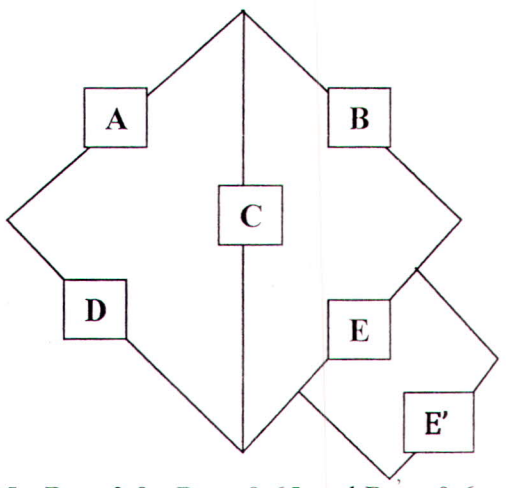
---

1. a) Elucidate the 'Five Pillars' of entrepreneurship of a tech-business.
   b) Discuss the decision issues with respect to break-even analysis. **[4+2]**

2. a) What is the system reliability, the technopreneur would determine for the product system as presented below, comprised of the components with reliability values, inscribed.



b) How would the innovator-entrepreneur determine, using decomposition method, the reliability of following sub-system of an equipment-product without considering E'? The reliability (R_i) values of the components in the circuit are furnished below.



$R_a = R_b = R_d = 0.85$; $R_c = 0.9$; $Re = 0.65$ and $R_{e'} = 0.6$

c) The cost of components, E and E' are Rs. 1500/- and Rs. 1200/- respectively. E' can be replaced with E. The selling price of the product increases by Rs. 600/- if the reliability of the circuit exceeds 94%. Which design do you recommend? **[2+3+2]**

3. a) Delineate the elements in a Technology Business Plan and b) why a B-Plan is essential for a new venture **[3+2]**

4. The Annual production of 20,000 units/ year has been planned based on the market survey report on demand-supply gap. Four (sequential) processes A, B, C & D are involved in manufacturing the product for the above referred production and the related data are provided in the following table:

Sl.No	Process	Processing time/ unit (Hours)	Cost of Machine (in Rs.Lakh)	Area (ft x ft)
1	A	0.20	10	10x8
2	B	0.25	5	7x9
3	C	0.50	1	6x6
4	D	0.18	3	5x9

a) Determine the number of machines and the estimated total cost of equipment.
(b) Draw a possible layout and find the cost of plant building considering the cost of civil construction as Rs. 2000/ per sq ft., for preparing the techno-economic feasibility report. Assume necessary data while providing justification. **[5+3]**

5. There are three alternative machines A, B and C for producing the component having specification as 20± 0.5 for production of 150 units per hour, and the relevant data are provided below

	Machine A	Machine B	Machine C
μ	19.5	20.05	19.98
σ	0.2	0.12	0.11
Production Capacity(units/hour)	120	100	110
Price of Machine (Rs.)	10,00,000	12,00,000	15,00,000
Running Cost(Rs./day)	100	100	100
Profit/unit (Rs.) based on quality of parts produced	200	205	210

Recommend the machine to be bought for maximum profit with justification. **[4]**