G.R. No.  U3G-11S(LS) Tr U3SG-1SS(ESE) Gomp U3G-14S (ESE) Tr U3SG-1SS(ESE) Meth U3G-14S (ESE) Tr U3SG-1SS(ESE) Meth U3G-14S (ESE) ESTC  DECEMBER 2019/ENDSEM  T. Y. B. TECH. (MECHANICAL) (SEMESTER - I)  COURSE NAME: PRODUCT DESIGN AND ENGINEERING  COURSE CODE: IE31175ME  (PATTERN 2017)  Time: [2 Hours] [Max. Marks: 50]  (*) Instructions to candidates: 1) Answer Q.1, Q.2, Q.3, Q.4, Q.5 OR Q.6, Q.7 OR Q.8 2) Figures to the right indicate full marks. 3) Use of scientific calculator is allowed 4) Use suitable data where ever required  Q.1) a) Explain in details the different stages of product development process. [6 marks]  OR  b) Explain in details the different activities of concept development process. [6 marks]  OR  b) Explain in details the procedure of concept generation.  [6 marks]  OR  b) Explain is details the procedure of concept testing.  [6 marks]  OR  b) Explain 3 selected creativity methods in design (inspiration card workshop, fictional enquiry and extreme characters).  [6 marks]	Total No. of Ouestio	ons - [08] Paper Code) Total No. o	of Printed Pages 02
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Q.4) a) What is theoretical part? Discuss two methods of calculating Design			lculating Design
Assembly efficiency. [4 marks]	Assembly effi	- a	[4 marks]
b) Give 4 examples of Material guidelines. [4 marks]	b) Give 4 examp		[4 marks]

Q. 5) a) Explain the steps of planning for prototypes. [6 marks] b) Define Comprehensive and Focused prototypes with suitable examples of [4 marks] c) Write down the list of principles for choosing a prototype. [4 marks] Q.6) a) Explain in details use/purpose of prototyping. [6 marks] b) Give examples of Analytical and Physical prototypes. [4 marks] c) Explain alpha and beta types of prototypes. [4 marks] Q.7) a) Explain in details the method of writing a Test plan. [6 marks] b) Calculate the effective rate of yearly return in annual compounding for P=1, n=1, i=12% per year. [4 marks] c) Define test deliverable and write the test deliverables before, during and after the testing. [4 marks] OR Q.8) a) What do we measure in a benchmark test? [6 marks] b) How long will it take money to triple if it is compounded annually at a rate of 12 % per year? [4 marks] c) Explain reliability goal in the context of product design by giving a suitable example.

[4 marks]