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MAULANA AZAD NATIONAL INSTITUTE OF TECHNOLOGY BHOPAL

Department of Mechanical Engineering

Fundamentals of Design (ME 252)

End Term Examination, November 2025

Max. Marks: 40
Time: 120 mins

Read the questions carefully.
All questions are compulsory.
Marks are written in small brackets ( )

1. **Give one line answer to each of the following questions. Each question carries 1 mark.** **(10)**

   (a) Expand AEIOU in Empathy mapping [CO3, BT 2]
   (b) What is the purpose of developing proof of concept? [CO2, BT 2]
   (c) What is the purpose of developing proof of production? [CO1, BT 2]
   (d) Name any one source of creeping specifications? [CO1, BT 2]
   (e) On which type of analogy vacuum cleaner is based? [CO1, BT 2]
   (f) When is SCAMPER used during Brain storming? [CO2, BT 1]
   (g) Which type of memory is utilized during natural mapping? [CO4, BT 1]
   (h) Name two major ways for securing funding to a startup. [CO5, BT 1]
   (i) What is an intellectual property? [CO5, BT 2]
   (j) Give two examples of innovation. [CO 5, BT 1]

2. **Answer following questions in limited words.**

   (a) What is the importance of identification of need in a design process? Explain by giving an example. **(3)** [CO1, BT 4]
   (b) Giving suitable example, explain various phases of product development. **(3)** [CO2, BT 2]
   (c) By citing example from the videos given to you, explain the importance of taking feedback from the end users during the design process. **(4)** [CO3, BT 3]

3. **Answer following questions in limited words.**

   (a) Who is an entrepreneur? Briefly explain any 4 characteristics of an entrepreneur. **(3)** [CO5, BT 3]
   (b) When is innovation said to take place? Briefly explain various types of innovation **(4)** [CO5, BT 3]
   (c) With the help of Gulf of execution and gulf of evaluation, explain various stages of action. With help of a schematic diagram, relate various attributes of discoverability to them. **(3)** [CO4, BT 3]

4. **Differentiate among *ANY 4 of the following pair of terms*. In each case, explain the differences by citing an example.** **(2.5 X 4 = 10)** [BT 2]

i. Memory for arbitrary things *vs* Memory for meaningful things [CO 4]	ii. Gate Stage method *vs* Spiral Method of project planning [CO 1]
iii. Innovation *vs* Invention [CO 1, 5]	iv. Knowledge in world *vs* Knowledge in head [CO 3]
v. Affordance *vs* Signifier [CO 2]	vi. Business *vs* startup [CO 5]