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UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

End Semester Examination, December 2017

Program/course: B. Tech Mechatronics | **Semester – VII**
Subject: Rapid Prototyping and Tooling | **Max. Marks : 100**
Code : MEEL413 | **Duration : 3 Hrs**
No. of page/s: 02

SECTION A [20 Marks]

Note: Attempt all questions. All question carry equal marks. Be brief and specific.

Q1.(a) Raw material for SLS is in……form.

Q1.(b) The layer building mechanism in SLA is……..

Q1.(c) Only electrically conductive materials can be machined using EDM (T/F).

Q1.(d) Prototype made by Rapid freeze prototyping can be used for testing.(T/F)

Q1.(e) ……LASER is used for Direct Laser Sintering.

Q1.(f) Vacuum used in EBM is of the order of…….

Q1.(g) One layer is cured completely at once in Solid Ground Curing.(T/F)

Q1.(h) Selective Mask Sintering uses……..as mask.

Q1.(i) Prototypes made by LOM have wood like appearance.(T/F)

Q1.(j) ……and ……..are the methods of support removal for FDM.

SECTION B [40 Marks]

Note: Attempt all questions. All question carry equal marks. Be brief and specific.

Q2 Define additive manufacturing. Briefly classify the techniques used in additive manufacturing.

Q3 Differentiate between Selective Laser Sintering and Selective Mask Sintering.

Q4 Discuss the advantages of Bridge LOM with neat sketches.

Q5 Differentiate between Solid Ground Curing and Stereo lithography.

SECTION C [40 Marks]

Note: Attempt all questions. All question carry equal marks. Be brief and specific.

Q6. (a) Explain Rapid Freeze Prototyping with its application and drawbacks.

(b) Explain Laser Engineering Net Shaping (LENS) process for additive manufacturing.

Or

(a) Explain the R-C circuit for spark generation through Electric Discharge Machining.

(b) A contour (shown in the figure below) is to be cut on wire-EDM. Total parameter of the contour is 235mm. Feed on the EDM machine is 100mm^2/min. If the specimen is 6 mm thick, calculate the time required to complete the model.

Q7.(a) Explain material deposition through Electron Beam Melting with neat sketch.

Q7.(b) Explain the general procedure for Rapid prototyping techniques.