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SEAT No. _____

No. of Printed pages: 2

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SARDAR PATEL UNIVERSITY

M.Sc. 1st Semester (Surface Coating Technology) Examination (CBCS)

Wednesday, April 11th 2018

Time: 10:00 am to 1:00 pm

Course No.: PS01ESCT22

Subject: Fundamentals Mechanical Engineering for Coating Technologist

Total Marks: 70

N.B. (1) Marks allotted to the question are on its RHS

(2) Illustrate your answers wherever necessary with the help of neat sketches & chemical equations.

Q.1 Choose the correct answer from the following

- 1 The non-ferrous metals do not contain (1)
 - (A) Iron (B) Sulphur
 - (C) Carbon (D) Phosphorous
- 2 The property of a material by virtue of which it will fracture without appreciable deformation (1) is called
 - (A) Ductility (B) Hardness
 - (C) Brittleness (D) Toughness
- 3 The gears used to transmit power between two parallel shafts (1)
 - (A) Worm Gears (B) Helical Gear only
 - (C) Bevel Gear (D) Spur and Helical Gears
- 4 Machining of diameter on steel shafts, on Lathe machine is known as (1)
 - (A) Turning (B) Drilling
 - (C) Facing (D) Milling
- 5 Which property is belongs to Cast iron material? (1)
 - (A) Ductility (B) Resilience
 - (C) Brittleness (D) Toughness
- 6 Bearings are used to (1)
 - (A) increase speed range (B) reduce speed range
 - (C) reduce friction (D) increase friction
- 7 The process of producing metal components of desired shape by pouring the molten (1) metal is known as
 - (A) Casting process (B) Blanking process
 - (C) powder metallurgy (D) hot working process
- 8 The robots are used for (1)
 - (A) Simple and creative work (B) Simple and repetitive work
 - (C) Difficult and creative work (D) Difficult and innovative work

Q.2 Attempt any Seven Questions:

(14)

- (a) Define these mechanical properties: Strength and Stiffness.
- (b) Why coupling are used in power transmission?
- (c) What are the characteristics of gear drive?
- (d) Explain: Three jaw chuck by stating its function.
- (e) Define: Drilling and Grinding operations.
- (f) What is spray nozzle? What is its function?
- (g) What are the advantages of metal casting process?
- (h) Define welding process. What are the advantages of welding process?
- (i) Define notching and perforating operations in sheet metal working. (with simple sketch)

- Q.3 a Compare important characteristics of: Belt drive and Chain drive. (6)
- Q.3 b What is the function of clutch? Draw line diagram of disk type clutch. (6)
- OR**
- Q.3 b Show any six operations performed on lathe machine, showing direction of speed, direction of feed and direction of depth of cut. (6)
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- Q.4 a Compare important characteristics of cold working and hot working of metals. (6)
- Q.4 b Write the stepwise process of manufacturing of castings by foundry process. (6)
- OR**
- Q.4 b Compare between cold rolling and hot rolling process. (6)
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- Q.5 a Explain with sketch: Shrinkage allowance and machining allowances given on pattern. (6)
- Q.5 b Explain hot forging process with suitable sketch. (6)
- OR**
- Q.5 b What is the stepwise process of powder metallurgy? (6)
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- Q.6 a Compare working of hydraulic versus pneumatic systems. (6)
- Q.6 b Draw and explain about hot spraying technique. (6)
- OR**
- Q.6 b What are the advantages, disadvantages and safety precautions for using Robots? (6)
