WRITTEN TEST FOR MFCP TECHNICAL ASSISTANT (INSTRUMENTS) A TO B – CERAMIC COATING FACILITY

Roll No.

Date: 26.11.2019

Time: 9.30 A.M

Duration: 60 Minutes

Total Marks: 50

INSTRUCTIONS TO THE CANDIDATE

1. Write your Roll Number on the top of the Question Booklet and in the answer sheet.
2. Write legibly the alphabet of the most appropriate answer in the separate answer sheet provided.
3. There will not be any Negative marking.
4. Over-writing is not permitted.
5. Candidate should sign in the question paper and answer sheet.
6. No clarifications will be given.
7. Candidate should hand over the answer sheet and question paper to the invigilator before leaving the examination hall.

Signature of the Candidate

TECHNICAL ASSISTANT (INSTRUMENTS) A to B – CERAMIC COATING FACILITY

1. SI unit of force is

(A) Pound
(B) Newton
(C) Dyne
(D) Joule

2. The process of finding out the resultant force is known as

(A) Superposition of forces
(B) Addition of forces
(C) Resolution of forces
(D) Composition of forces

3. The resultant of two forces P and Q acting along the same straight line and in same direction is

(A) 2P+Q
(B) P+2Q
(C) P+Q
(D) P-Q

4. Following are the angles between two force directions. In which set of angles, the resultant becomes maximum and minimum

(A) 90° and 0°
(B) 0° and 90°
(C) 180° and 0°
(D) 0° and 180°

5. The point, at which the whole weight of the body may be considered to act, is known as

(A) Centre of mass
(B) Centre of curvature
(C) Centre of gravity
(D) Moment of Inertia

6. If the resultant of forces acting on a body is zero, the body

(A) is in equilibrium
(B) is not in equilibrium
(C) is moving with non uniform velocity
(D) None of the above

7. When the car moves on the road its wheel has

(A) Purely rotational motion
(B) Purely translational motion
(C) Rotational and translational motion
(D) None of the above

8. The maximum displacement of a body from its mean position is

(A) Amplitude
(B) Mean position
(C) Frequency
(D) Time period

9. The force applied on a body of mass 150kg to produce an acceleration of 10m/s^2, is

(A) 15 N
(B) 150 N
(C) 1500 N
(D) 3000 N

10. The force of friction acts in a direction _____ to the direction of motion of object.

(A) Same
(B) Opposite
(C) Perpendicular
(D) Downwards

11. The body will move only when

(A) Force of friction = applied force
(B) Force of friction < applied force
(C) Force of friction > applied force
(D) All of the above

12. The ratio of the limiting force of friction (F) to the normal reaction (R) is known as

(A) Coefficient of friction
(B) Force of friction
(C) Angle of friction
(D) None of the above

13. Friction between two contacting surfaces with a thick layer of lubricant in between them, is

(A) Solid friction
(B) Rolling friction
(C) Greasy friction
(D) Film friction

14. The mini drafter serves the purpose of everything except

(A) Scales
(B) Set square
(C) Protractor
(D) Compass

15. During operation, the two arms of the drafter remain at

(A) 45°
(B) 90°
(C) 180°
(D) 270°

16. Which of the following compass is used to draw small size circles?

(A) Beam
(B) Large
(C) Bow
(D) Drop

17. The designation of sheet of size 594 x 841 is

(A) A0
(B) A1
(C) A2
(D) A3

18. During the compression stroke of a four stroke diesel engine, the piston compresses.

(A) Air-fuel mixture
(B) Atomized diesel
(C) Diesel vapor
(D) Air

19. Theoretically, during expansion process in a four stroke engine,

(A) Inlet valve opens and exhaust valve closes
(B) Inlet valve closes and exhaust valve opens
(C) Both valve remains closed
(D) Both valve remains opened

20. The process of flushing out the products of combustion from the engine cylinder by fresh charge is known as

(A) Turbo charging
(B) Super charging
(C) Scavenging
(D) None of the above

21. The number of crankshafts for opposed piston engine is

(A) one
(B) two
(C) three
(D) four

22. Chemically correct air fuel mixture ratio for SI engine is around

(A) 15:1
(B) 9:1
(C) 6:1
(D) 12:1

23. In Otto cycle, addition of heat takes place at

(A) Constant pressure
(B) Constant volume
(C) Partially at constant pressure
(D) Any of the above

24. Which one of the following is a lower pair?

(A) Cam and follower
(B) Toothed gearing
(C) Shaft rotating in bush
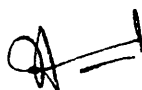(D) None

25. In a 6×20 wire rope, number 6 indicates:

(A) Diameter of the wire rope in mm
(B) Number of strands in the wire rope
(C) Number of wires
(D) Length in feet

26. The motion transmitted between the teeth of two spur gears is generally,

(A) Sliding
(B) Rolling
(C) Rotary
(D) Partly sliding and partly rolling

27. The product of circular pitch and diametral pitch equals:

(A) π
(B) 1
(C) Infinity
(D) None

28. Which of the following is not a common section of V-belts?

(A) F
(B) C
(C) E
(D) A

29. A rack is a gear of infinite

(A) Pitch
(B) Module
(C) Diameter
(D) Number of teeth.

30. Which process allows controlling grain structure of the product?

(A) Casting
(B) Forging
(C) Die Casting
(D) None of the mentioned

31. Chrome and Nickel are added to Steel to improve

(A) corrosion resistance and high temperature resistance
(B) strength
(C) ductility
(D) weldablity

32. Which of the following ferrous alloys can be casted into intricate shapes?

(A) Plain carbon steels
(B) Alloy steels
(C) Cast irons
(D) All of the above

33. Leakage of inflammable gas from a corroded pipe can cause

(A) Acidity
(B) Alkalinity
(C) Turbidity
(D) Fire hazards

34. What kind of indenter is used in a Brinell test?

(A) Diamond cone
(B) Steel ball
(C) Pen dot
(D) Long tube

35. Which of the following coatings has a glass composition?

(A) Paint
(B) Galvanized
(C) Enamel
(D) Anodized

36. Which common application do anodizing and galvanizing serve?

(A) Corrosion resistance
(B) Improved surface
(C) Zinc coating
(D) Increased strength

37. Which material is used for intermediate polishing of soft materials?

(A) Emery paper
(B) Silicon carbide
(C) Globar
(D) Acetal copolymer polyoxymethylene

38. The permanent mode of deformation of a material is known as

(A) Elasticity
(B) Plasticity
(C) Slip deformation
(D) Twinning deformation

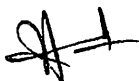**39. The ability of materials to develop a characteristic behavior under repeated loading is known as**

(A) Toughness
(B) Resilience
(C) Hardness
(D) Fatigue

40. Deformation that occurs due to stress over a period of time is known as _____

(A) Wear resistance
(B) Fatigue
(C) Creep
(D) Fracture

41. Which of the following is NOT a bioceramic coating

(A) Diamond-like carbon
(B) Titanium nitride
(C) Hydroxyapatite
(D) Teflon

42. Metal coating done using an electrochemical cell is known as

(A) Vapour Deposition
(B) Electroplating
(C) Spraying
(D) Electrospinning

43. Glow discharge plasmas in a gas containing chambers are created by

(A) Electrical discharge
(B) Laser pumping
(C) X Ray irradiation
(D) Sunlight focusing

44. Magnetron sputtering is a variant of

(A) Laser Ablation
(B) Plasma Spraying
(C) Physical Vapour Deposition
(D) Chemical Vapour Deposition

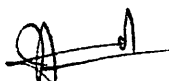**45. What is the ratio of Ti and N in naturally occurring titanium nitride (TiN)**

(A) 1:1 ratio
(B) 0.6 : 1.2 ratio
(C) 1.2 : 0.6 ratio
(D) TiN does not occur in nature

46. In Physical Vapour Deposition, why the substrate is rotated ?

(A) To impart high conductivity
(B) To induce colour shade
(C) To obtain coating uniformity
(D) To achieve high growth rate

47. How to improve the coating adhesion on a metal ?

(A) By cleaning the surface alone
(B) By increasing the surface roughness alone
(C) By putting a pre-layer alone
(D) By combining all the processes above

48. What is the hybridization status of carbon atoms in a diamond crystal

(A) sp^3
(B) sp^2
(C) sp
(D) None

49. Diamond-like carbon (DLC), in general, exists as

(A) Crystalline particles
(B) Amorphous network
(C) Layered structure
(D) Thick liquid

50. Hydroxyapatite coatings are made of bone implants because

(A) It attaches biologically with bone
(B) It is non-corrosive
(C) It adheres well with bone implants
(D) It can supply calcium for body

ANSWER KEY
TECHNICAL ASSISTANT (INSTRUMENTS) A TO B – CERAMIC COATING FACILITY (MFCP)

1. (B)		32. (C)	
2. (D)		33. (D)	
3. (C)		34. (B)	
4. (D)		35. (C)	
5. (C)		36. (A)	
6. (A)		37. (B)	
7. (C)		38. (B)	
8. (A)		39. (D)	
9. (C)		40. (C)	
10. (B)		41. (D)	
11. (B)		42. (B)	
12. (A)		43. (A)	
13. (D)		44. (C)	
14. (D)		45. (D)	
15. (B)		46. (C)	
16. (D)		47. (D)	
17. (B)		48. (A)	
18. (D)		49. (B)	
19. (C)		50. (A)	
20. (C)			
21. (A)			
22. (A)			
23. (B)			
24. (C)			
25. (B)			
26. (B)			
27. (A)			
28. (A)			
29. (C)			
30. (B)			
31. (A)			