

PAPER – I  
FITTER  
(THEORY)  
SEMESTER – IV

TIME: 3 HRS.

MARKS: 150

Note: Attempt all the questions.  
All questions carry equal marks.

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**Choose the correct answer:**

1. Which gear arrangement is used to change the circular motion of horizontal to vertical without change in speed ratio?
  - a. Two spur gear
  - b. Two helical gear
  - c. Two bevel gear
  - d. Worm and worm gear
2. A systematic approach for maintenance is
  - a. Problem – Cause – Diagnosis – Rectification
  - b. Problem– Diagnosis – Cause – Rectification
  - c. Problem – Measure – Diagnosis – Rectification
  - d. Problem– Diagnosis – Measure – Rectification
3. A gear wheel has 36 teeth and 3 mm module, its pitch diameter is?
  - a. 12 mm
  - b. 75 mm
  - c. 80 mm
  - d. 108 mm
4. What will be the result if the clearance angle in drill is increased?
  - a. Poor wedging action
  - b. Weak cutting edge
  - c. Rough hole surface
  - d. Increased point angle
5. The main purpose of using worm and worm wheel drives in machines and their accessories is to?
  - a. Transmit large torque
  - b. Provide large speed reduction from worm shaft to worm wheel
  - c. Transmit higher speeds
  - d. Provide large speed reduction from worm wheel to worm shaft
6. The tooth thickness of rack is measured by?
  - a. Universal vernier caliper
  - b. Gear tooth vernier caliper
  - c. Flange micrometer
  - d. Gear tester
7. Which one of the following groups of properties enables the manufacture of chain hooks from wrought iron?
  - a. Ductility, malleability and hardness
  - b. Hardness, toughness and ductility
  - c. Malleability, ductility and toughness
  - d. Hardness, toughness and brittleness
8. The composition of soft solder is
  - a. Lead-37%, tin-63%
  - b. Lead-50%, tin-50%
  - c. Lead-63%, tin-37%
  - d. Lead-70%, tin-30%

9. The filler metal used in brazing has melting point of above  
a. 200°C c. 420°C  
b. 300°C d. 520°C
10. The commonly used flux in brazing is  
a. Borax c. Lead sulphide  
b. Rosin d. Zinc chloride
11. A high viscosity index indicates relatively \_\_\_\_\_ changes in viscosity of the oil with the temperature.  
a. Larger c. Constant  
b. Smaller d. None of these
12. \_\_\_\_\_ is the property of lubricating oil due to which the oil particles stick with the metal surfaces.  
a. Oiliness c. Adhesiveness  
b. Pour point d. None of these
13. The use of jigs and fixtures  
a. Facilitates deployment of less skilled labour for production  
b. Eliminates pre-machining operations like marking, measuring, laying out etc.  
c. Reduces manual handling operations  
d. All of these
14. The following is(are) the function(s) of a jig  
a. Holding the workpiece c. Guiding the cutting tool  
b. Locating the workpiece d. All of these
15. Fixtures are used in  
a. Milling c. Turning  
b. Shaping d. All of these
16. The following holds the work piece securely in a jig or fixture against the cutting forces  
a. Locating device c. Guiding device  
b. Clamping device d. Indexing device
17. The following material is commonly used for making locating and clamping devices  
a. High carbon steel c. High speed steel  
b. Low carbon steel d. Die steel
18. The following type of jig suits best for drilling of holes in hollow cylindrical components, with relatively smaller outside and inside diameters, such as bushes  
a. Solid type jig c. Box type jig  
b. Pot type jig d. Open type jig
19. The following type of jig is used to drill a series of equidistant hole along a circle  
a. Index jig c. Open type jig  
b. Plate type jig d. Pot type jig

20. The jigs and fixtures can be constructed through  
a. Casting  
b. Fabrication  
c. Welding  
d. All of these
21. Which material is used for pipes which conduct water and air?  
a. Stainless steel  
b. Copper  
c. Ceramic  
d. Plastic
22. Which of the following valves is used to maintain pressure in the system?  
a. Pressure relief valve  
b. Check valve  
c. Manual control valve with variable flow plug  
d. Pneumatic control valve with variable-flow plug
23. \_\_\_\_\_ is the property of a lubricating oil due to which the oil retains a thin film between the two surfaces.  
a. Oiliness  
b. Film Strength  
c. Adhesiveness  
d. None of these
24. Maintenance consists of the following action(s)  
a. Replacement of components  
b. Repair of components  
c. Service of components  
d. All of these
25. Class-A fire consists of fire due to  
a. Wood  
b. Oil  
c. Transformer  
d. Chemical
26. Water is used to extinguish  
a. Class-A fires  
b. Class-B fires  
c. Class-C fires  
d. All of these
27. The following class of fire occurs in electrical equipment  
a. Class-A fires  
b. Class-B fires  
c. Class-C fires  
d. All of these
28. The following extinguisher is suitable for cotton or other textile fire  
a. Water  
b. Soda acid  
c. Foam  
d. Dry chemicals
29. \_\_\_\_\_ is best suited to extinguish oil or flammable liquid fire.  
a. Soda acid  
b. Vaporizing liquid  
c. Foam  
d. Dry chemical
30. An alloy is a  
a. Pure metal  
b. Mixture of metals in any proportion  
c. Mixture of metals in fixed proportion  
d. Mixture of two non-metals



31. Bronze is an alloy of  
a. Copper and Nickel  
b. Copper and iron  
c. Copper and Tin  
d. Copper and Aluminium
32. Which of the following is not an alloy?  
a. Steel  
b. Copper  
c. Brass  
d. Bronze
33. Duralumin is an alloy of  
a. Aluminium and Copper  
b. Aluminium and iron  
c. Aluminium and Carbon  
d. Aluminium and mercury
34. Which of the following alloy is used in making aircraft structures?  
a. Duralumin  
b. Brass  
c. Bronze  
d. Manganin
35. Which of the following method is adopted for preventing corrosion by acids?  
a. Deaeration  
b. Removal by using ion-exchange resin  
c. Neutralisation with lime  
d. Dehumidification
36. Which of the following method is adopted for preventing corrosion by moisture?  
a. Deaeration  
b. Removal by using ion-exchange resin  
c. Neutralisation with lime  
d. Dehumidification
37. The process which lowers the content of sulphur and phosphorus in steels is known as  
a. Refining  
b. Passivation  
c. Inhibition  
d. Stimulation
38. Annealing is a heat treatment given to metals to  
a. Prevent dezincification  
b. Remove the residual stresses  
c. Lower the sulphur content  
d. Form a protective layer
39. Magnesium is used in high resistivity electrolytes due to its  
a. Neutral potential  
b. Most positive potential  
c. Most negative potential  
d. Zero potential
40. Crowning of a pulley is done to  
a. Prevent the slipping of a belt  
b. To increase the tension of a belt  
c. To increase the angle of contact  
d. None of these
41. In which of the following drives, there is no slip  
a. Open belt drive  
b. Crossed belt drive  
c. Rope drive  
d. Chain drive

42. The angle of contact ( $\theta$ ) for crossed belt drive is given by

- a.  $180-2\alpha$
- b.  $180+2\alpha$
- c.  $180-\alpha$
- d.  $180+\alpha$

The value of  $\alpha$  is given by  $\sin\alpha = (r_1+r_2)/x$ , Where  $r_1$ =Radius of larger pulley,  $r_2$ =Radius of smaller pulley,  $x$  = Distance between the centers of the two pulleys.

43. The power transmitted by a belt drive is given by

- a.  $(T_1-T_2) \times v$
- b.  $(T_1-T_2) \times \omega$
- c.  $(T_1-T_2) / v$
- d.  $(T_1-T_2) / \omega$

Where,  $T_1$ =Tension on tight side,  $T_2$ =Tension on slack side, where  $v$  = linear velocity,  $\omega$  = angular velocity.

44. Economy in material handling can be achieved by

- a. Employing gravity feed movements
- b. Minimizing distance of travel
- c. By carrying material to destination without using manual labour
- d. All of these

45. Principle of 'Unit load' states that

- a. Materials should be moved in lots
- b. One unit should be moved at a time
- c. Both (a) & (b)
- d. None of these

46. Fork lift truck is used for

- a. Lifting and lowering
- b. Vertical transportation
- c. Both (a) & (b)
- d. None of these

47. Rag bolt is a type of:

- a. Welding bolt
- b. Foundation bolt
- c. Heavy duty bolt
- d. Locking bolt

48. Lubricating oil

- a. Minimizes wear in moving parts
- b. Helps in keeping the parts cool
- c. Washes away and carries away dirt
- d. All of these

49. In the following system, lubricating oil is carried in separate tanks from where it is fed to the engine

- a. Mist lubrication system
- b. Wet sump system
- c. Dry sump system
- d. Splash system

50. \_\_\_\_\_ is the ability of the oil to resist internal deformation due to mechanical stresses.

- a. Viscosity
- b. Flash point
- c. Fire point
- d. None of these