

DO NOT OPEN THIS TEST BOOKLET UNTIL YOU ARE ASKED TO DO SO

23-0005-AB

TEST BOOKLET
PAPER-II

Time Allowed: 1 hr

WORKSHOP CALCULATION AND SCIENCE

Maximum Marks: 50

INSTRUCTIONS TO CANDIDATES

Read the instructions carefully before answering the questions: -

1. This Test Booklet consists of 08 (eight) pages and has 50 (fifty) questions.
2. IMMEDIATELY AFTER THE COMMENCEMENT OF THE EXAMINATION, YOU SHOULD CHECK THAT THIS BOOKLET *DOES NOT* HAVE ANY UNPRINTED OR TORN OR MISSING PAGES OR ITEMS ETC. IF SO, GET IT REPLACED BY A COMPLETE TEST BOOKLET.
3. Please note that it is the candidate's responsibility to fill in the Roll Number and other required details carefully and without any omission or discrepancy at the appropriate places in the OMR Answer Sheet. Any omission/discrepancy will render the OMR Answer Sheet liable for rejection.
4. Do not write anything else on the OMR Answer Sheet except the required information. Before you proceed to mark in the OMR Answer Sheet, please ensure that you have filled in the required particulars as per given instructions.
5. Use only Black Ball Point Pen to fill the OMR Answer Sheet.
6. Each question comprises of 04 (four) responses (answers). You are required to select the response which you want to mark on the OMR Answer Sheet. In case you feel that there is more than one correct response, mark the response which you consider the best. In any case, choose *ONLY ONE* response for each item.
7. After you have completed filling in all your responses on the OMR Answer Sheet and the examination has concluded, you should hand over to the Invigilator *only the OMR Answer Sheet*. You are permitted to take the Test Booklet with you.
8. Penalty for wrong answers in case of Multiple Choice based Questions:
THERE WIL BE PENALTY FOR WRONG ANSWERS MARKED BY A CANDIDATE.
 - (i) There are four alternatives for the answer to every question. For each question for which a wrong answer has been given by the candidate, one-third of the marks assigned to the question will be deducted as penalty.
 - (ii) If a candidate gives more than one answer, it will be treated as a wrong answer even if one of the given answers happens to be correct and there will be same penalty as above to the question.
 - (iii) If a question is left blank. i.e., no answer is given by the candidate; there will be no penalty for that question.

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WORKSHOP CALCULATION & SCIENCE

Choose the correct answer for the following questions: (1 x 50 = 50)

1. Cast iron is having the excellent properties of
 - (a) Ductility
 - (b) malleability
 - (c) brittleness
 - (d) all of above

2. Heat treatment of metals is necessary
 - (a) To decrease strength of the metal
 - (b) To make the metal good in appearance
 - (c) to produce certain desired properties
 - (d) all of above

3. The hardness of steel increases:
 - (a) By increasing the carbon percentage
 - (b) by slow cooling in air
 - (c) by fast cooling in air
 - (d) by decreasing the carbon percentage

4. A liquid has only
 - (a) Shear modulus
 - (b) bulk modulus
 - (c) young modulus
 - (d) none of these

5. Which law is also known as elasticity law?
 - (a) Columns law
 - (b) Friction law
 - (c) Hook's law
 - (d) None of these

6. What is the stress-strain curve?
 - (a) It is the relationship between stress and strain
 - (b) It is the percentage of stress and stain
 - (c) It is the difference between stress and strain
 - (d) None of the above

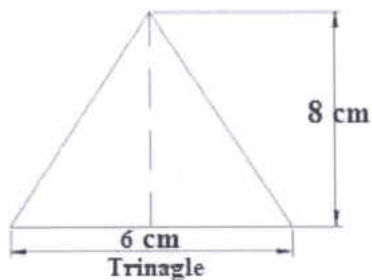
7. The point through which the whole weight of the body acts is called _____.
 - (a) Inertial point
 - (b) Central point
 - (c) Centroid
 - (d) Centre of gravity

8. Where does the centre of gravity of a circle lie?
 - (a) Anywhere on its diameter
 - (b) anywhere on its circumference
 - (c) anywhere on its radius
 - (d) at its centre

9. What is an over estimation?
- When an estimate perfectly matches the actual estimate
 - no work started as per estimate
 - when an estimate is exceeds to actual estimate
 - when an estimate falls short of the actual estimate
10. Unit of strain is
- MPa
 - N/M²
 - unit less
 - meter
11. What is the formula to find co-efficient of friction?
- $\mu = F \times R$
 - $\mu = R/W$
 - $\mu = R/F$
 - $\mu = F/R$
12. What is the purpose of friction?
- To increase the friction
 - to reduce the friction
 - to increase the pressure
 - to reduce the pressure
13. When the two surfaces in contact have a very thin layer of lubricant in between them, it is known as
- Greasy friction
 - film friction
 - solid friction
 - Rolling friction
14. What is the formula for compound interest, if compounded annually?
- $A = P \left[1 + \frac{1}{2} \left(\frac{r}{100} \right) \right]^{2n}$ and $C.I = A - P$
 - $A = P \left[1 + \frac{1}{2} \left(\frac{r}{100} \right) \right]^n$ and $C.I = A - P$
 - $A = P \left[1 + \frac{1}{2} \left(\frac{r}{100} \right) \right]^{4n}$ and $C.I = A - P$
 - none of these
15. What is the selling price if the cost price is Rs7282/- with a profit of Rs208/-
- Rs.7490
 - Rs.7074
 - Rs.7290
 - Rs.7690
16. What is the formula to determine selling price (SP) if there is a loss
- $\left(\frac{100}{100 + \text{profit}\%} \right) \times S.P$
 - $\left(\frac{100 - \text{profit}\%}{100} \right) \times C.P$
 - $\left(\frac{100 + \text{profit}\%}{100} \right) \times C.P$
 - $\left(\frac{100}{100 - \text{profit}\%} \right) \times S.P$

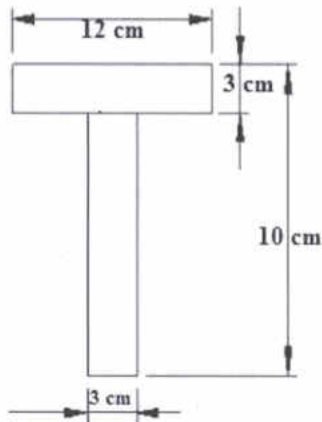
17. Direct labour is known as
- Foreman
 - process labour
 - productive labour
 - b and c
18. What is the term, for the details of material, quality grade, brand name, voltage and rating of current etc?
- Price catalogue
 - raw material
 - drawing
 - specification of materials
19. Find out the total estimation cost for making the component of 8 drilled hole dia 10 mm and 4 numbers of M6 taps in the plate, if Rs.8/- per drilled holes and Rs.12 per drill and tap
- Rs.112
 - Rs.121
 - Rs.211
 - none of these
20. What is the formula of prime cost of product?
- prime cost=direct cost+directlaour cost +direct expenses
 - prime cost=direct cost+directlaour cost -direct expenses
 - prime cost=direct cost-direct laour cost +direct expenses
 - none of these
21. Which one of the following acts in between the wheels and roads, if vehicles are able to run on roads?
- Motion
 - erosion
 - corrosion
 - friction

22. What is the centre of gravity of the lamina?



- 1.5 cm
- 1.55 cm
- 2.0 cm
- 1.45 cm

23. What is the centre of gravity in T section?

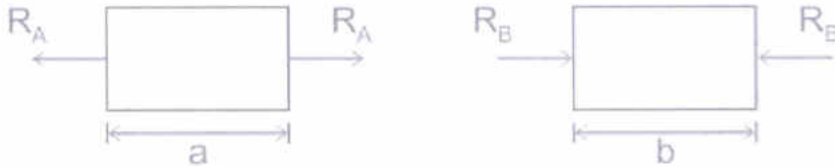


- (a) 7.5 cm
 - (b) 6.5 cm
 - (c) 8.02 cm
 - (d) 8.545 cm
24. What is the diameter of the circle, if the circumference is 31.4 cm?
- (a) 10 cm
 - (b) 1.0 cm
 - (c) 0.10 cm
 - (d) 8.5 cm
25. What is the formula for circumference of a circle whose diameter is d?
- (a) πr^2
 - (b) πr
 - (c) $\pi d^2/4$
 - (d) $2\pi r$
26. What is the diameter of the circle, if the area of the circle is 12.56 cm²?
- (a) 16 cm
 - (b) 4 cm
 - (c) 2 cm
 - (d) none of these
27. What is the value of any number raised to the power of 0?
- (a) -1
 - (b) 0
 - (c) 1
 - (d) none of these
28. What is the simplified value of $(6z+18)/(3z+9)$?
- (a) 33
 - (b) 3
 - (c) 4
 - (d) no solution possible
29. If $(2a+b)/(a+4b) = 3$ then find the value of $(a+b)/(a+2b)$ -
- (a) 1.0/9
 - (b) 9/10
 - (c) 10/9
 - (d) 9/100

30. As per Hook's law, σ is ----- to ϵ

- (a) Indirectly proportional
- (b) proportional
- (c) directly proportional
- (d) no relation

31. Which types of stress is working in a and b?



- (a) Compressive and tensile
- (b) tensile and shear
- (c) compressive and shear
- (d) tensile and compressive

32. What is the name of the structure formed, if steel is heated for about 723°C ?

- (a) Austenite
- (b) Cementite
- (c) ferrite
- (d) martensite

33. _____ method is applied to make a hard work-piece suitable for machining.

- (a) Hardening
- (b) annealing
- (c) tempering
- (d) nitriding

34. What is the selling price, if the profit is 5% for a chair bought at Rs1150/- with Rs50/- as rickshaw fare?

- (a) 1160
- (b) 1240
- (c) 1260
- (d) 1200

to check

35. If the difference between CP and selling price of an article is Rs 300 and loss is 25%, then what is the selling price of the product?

- (a) 900
- (b) 90
- (c) 9000
- (d) 980

36. A product is bought for Rs 49.90 and sold it for Rs 58.90, what will be the gain profit?

- (a) 18%
- (b) 1.8%
- (c) 4%
- (d) 10%

37. What is the estimation of milling cost of a rectangular block size $200 \times 80 \times 40$ mm, if cost machining operation is Rs3/sq.cm?

- (a) Rs 2484
- (b) Rs 248.4
- (c) Rs 2844
- (d) Rs 2448

38. If a person were to sell his cycle for Rs 7500, he would lose 25%. To gain 38% he should sell it for _____.
- (a) Rs 13080
 - (b) Rs 18300
 - (c) Rs 13800
 - (d) Rs 13900
39. A shopkeeper wishes to give 10% commission on the market price of an article but also wants to earn a profit of 20%. If his price is Rs 190, then market price is _____.
- (a) Rs 253.3
 - (b) Rs 235.3
 - (c) Rs 290.3
 - (d) Rs 153.3
40. What is the appropriate SI unit for distance?
- (a) inches
 - (b) centimetre
 - (c) kilometre
 - (d) meter
41. What is the carbon percentage in low carbon steel?
- (a) 0.02%-0.03%
 - (b) 0.50%-0.56%
 - (c) 0.15%-0.25%
 - (d) 0.015%-0.10%
42. Which one is related to estimation of work?
- (a) Packing
 - (b) hand book
 - (c) bill of material
 - (d) information table
43. Hand book is a -----
- (a) Dictionary of materials
 - (b) Model book of various works
 - (c) Type of reference work or other collection of instruction
 - (d) Design book of latest works
44. A steel wire \varnothing 4 mm is located in tension with a weight of 70 kg. Determine the stress produced.
- (a) 5.5 kg/mm²
 - (b) 5.5 kg/cm²
 - (c) 4.5 kg/mm²
 - (d) 4.5 kg/cm²
45. Which quenching medium is commonly used?
- (a) Lead & brine solution
 - (b) Water & lead
 - (c) Water & brine solution
 - (d) Water & oil
46. In how many years will a sum of Rs 5000 yield a simple interest of Rs 1440 at 12% per annum
- (a) 24 year
 - (b) 4.2 year
 - (c) 2.4 year
 - (d) 3 year

47. A sum of money at simple interest amount to Rs 895 in 4 years and to Rs 943 in 5 years. The sum is
- (a) Rs 698
 - (b) Rs 703
 - (c) Rs 307
 - (d) Rs 700
48. What is the centre of gravity of a solid hemisphere from its base
- (a) $4r/5$
 - (b) $r/2$
 - (c) $3r/8$
 - (d) $3r/4$
49. A surahi is the combination of
- (a) A cylinder and a cone
 - (b) A sphere and a cylinder
 - (c) Two hemispheres
 - (d) A hemisphere and a cylinder
50. Which is elastic material?
- (a) Polycarbonate
 - (b) nylon
 - (c) polystyrenes
 - (d) Celluloid
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