

MIZORAM PUBLIC SERVICE COMMISSION

TECHNICAL COMPETITIVE EXAMINATIONS FOR RECRUITMENT TO THE POST OF GRADE-III OF MIZORAM HEALTH SERVICE (DENTAL SURGEON SUB-CADRE) UNDER HEALTH & FAMILY WELFARE DEPARTMENT, GOVERNMENT OF MIZORAM. OCTOBER, 2022

TECHNICAL SUBJECT PAPER - III

Time Allowed : 2 hours

Full Marks : 200

*All questions carry equal marks of 2 each.
Attempt all questions.*

1. Cavity varnish is indicated under amalgam restorations to
 - (a) Prevent galvanic currents from reaching the pulp
 - (b) Improve the marginal seal of the restorations
 - (c) Seal the dentinal tubules completely
 - (d) Act as an effective thermal insulator
2. Which of the following do polycarboxylate and GIC have in common?
 - (a) Polysiloxane
 - (b) Phosphoric acid
 - (c) Polyacrylic acid
 - (d) Ion leachable glass.
3. Eugenol may be replaced in the zinc oxide eugenol cement by
 - (a) Acetic acid
 - (b) Alginic acid
 - (c) Phosphoric acid
 - (d) Ortho-ethoxy acid
4. Glass ionomer cement is composed of
 - (a) Zinc oxide powder and poly carboxylic liquid
 - (b) Zinc oxide powder and phosphoric acid
 - (c) Alumina silicate powder and poly carboxylic liquid
 - (d) Alumina silicate powder and phosphoric acid
5. Which of the following cements is most kind to pulp?
 - (a) Polycarboxylate
 - (b) GIC
 - (c) Resin cement
 - (d) Silicate
6. Silicate cement is indicated in
 - (a) Mouth breathers
 - (b) Patients with high caries index
 - (c) In the restoration of posterior tooth
 - (d) Thumb suckers.
7. Which of the following restorative material is recommended for root surface caries?
 - (a) GIC
 - (b) Composites
 - (c) Direct filling gold
 - (d) Amalgam
8. Vitremer is
 - (a) Metal modified GIC
 - (b) Resin modified GIC
 - (c) Organically modified composite
 - (d) Polyacid modified composite
9. What is the minimal occlusal thickness that will provide resistance to fracture of amalgam
 - (a) 1.0mm
 - (b) 1.2mm
 - (c) 1.5mm
 - (d) 1.8mm

10. An advantage of using a gold restoration rather than an amalgam restoration is
 - (a) The ease of tooth preparation
 - (b) Better adaptation to the walls of the preparation
 - (c) The greater edge strength of cast gold
 - (d) It is less expensive
11. Amount of fluoride in amalgam is
 - (a) 8% SnF₂
 - (b) 10% SnF₂
 - (c) 1% NaF
 - (d) 1% SnF₂
12. The most recent direct filling gold which produces the hardest surface on condensation is
 - (a) Mat gold
 - (b) Encapsulated powdered gold
 - (c) Mat gold alloyed with calcium and wrapped in gold foil
 - (d) Platinized gold
13. Bonding of composite resins to tooth structure is by
 - (a) Mechanical bond
 - (b) Covalent bond
 - (c) Ionic bond
 - (d) Vanderwaal forces
14. An old composite restoration is to be replaced. The best method is
 - (a) To remove the entire restoration, re-etch and refill
 - (b) To roughen the old restoration, re-etch and refill
 - (c) To roughen the old restoration, refill with GIC
 - (d) Composite restoration cannot be replaced or refilled
15. The major constituent in composite is
 - (a) BIS-GMA and UDMA
 - (b) Glycol and Glycidine
 - (c) GIC and Silicate
 - (d) Zinc oxide
16. Titanium casting is done
 - (a) Under vacuum in argon atmosphere
 - (b) Under air pressure in nitrogen atmosphere
 - (c) In specially fabricated aluminium vanadium crucible
 - (d) Using CAD-CAM technique
17. Which is the only nearly pure metal used for dental casting purposes?
 - (a) Gold
 - (b) Palladium
 - (c) Silver
 - (d) Pure titanium CP Ti
18. When dental bur is sterilized by autoclaving, which of the following chemical is used for protection of the bur?
 - (a) Sodium nitrate
 - (b) Sodium nitrite
 - (c) Silver nitrate
 - (d) Silver nitrite
19. The bur used to penetrate porcelain fused metal restoration is
 - (a) Mueller bur
 - (b) Transmetal bur
 - (c) Safety tip tapered diamond bur
 - (d) LN bur
20. The angle former is a special type of
 - (a) Chisel
 - (b) Excavator
 - (c) Hatchet
 - (d) Rotary instrument

21. As far as the raise of frictional heat, in using various rotary cutting instruments is concerned which one of the following is the most kind to the pulp?
- (a) Stainless steel bur (b) Diamond bur
(c) Carbide bur (d) Carbon steel bur
22. Which of the following is not true about hand instruments used in operative dentistry?
- (a) They are generally made of stainless steel
(b) Nickel-cobalt-chromium is never used in its fabrication
(c) Carbon steel is more efficient than stainless steel
(d) It can be made with stainless steel with carbide inserts
23. Carborundum is chemically known as
- (a) Chromium carbide (b) Nickel carbide
(c) Aluminum carbide (d) Silicon carbide
24. The thickness of matrix band is
- (a) 0.015 – 0.02 inch (b) 0.0015 – 0.002 inch
(c) 0.0015 – 0.002 mm (d) 0.015 – 0.02 mm
25. Enamel hatchet is differentiated from chisel by all except
- (a) Curve in one plane only (b) Blade is larger
(c) Blade is perpendicular to the long axis of handle (d) Blade is heavier
26. Winged rubber dam retainer in endodontics advantages are all except
- (a) Radiographs are good showing full length of canals
(b) Stability
(c) Provide extra bucco-lingual retraction
(d) Dam, clamp and frame placed in one operation
27. Osseo integration implies
- (a) The process of inserting implants in bone
(b) Integration of the bone and implants with fibrous tissue between them
(c) At least some direct contact of living bone and the surface of the implant at the light microscopic level of magnification
(d) Bone tissue not accepting implants
28. Endosteal implant can be
- (a) Root form implant only (b) Plate form implant only
(c) Can be either root form or plate form (d) Combination of both
29. The minimum space between implant should be
- (a) 2 mm (b) 5 mm
(c) 3 mm (d) 4 mm
30. An endosteal implant is an implant inserted in
- (a) Periosteum (b) Root canal
(c) A & B (d) Bone
31. A permucosal seal in case of a dental implant is
- (a) Possible
(b) Absolutely impossible as tissue will not stick to the implant surface
(c) Not necessary at all
(d) Necessary only if Patient is having poor oral hygiene

32. While inserting an implant a gap is observed between the implant and the prepared site, the implant will most probably
- (a) Fail
 - (b) Be a success
 - (c) Gap does not affect the success of the implant
 - (d) Fracture
33. Whenever implants are placed in the posterior mandible they should
- (a) Engage the superior cortical bone and medullary bone
 - (b) Engage only the superior cortical bone may be enough
 - (c) Engage the superior cortical bone, medullary bone and inferior cortical bone
 - (d) Both (a) & (b)
34. Probing under local anaesthesia is used
- (a) To check if any sharp bony edge is there
 - (b) To check for caries
 - (c) To check the length of the implant
 - (d) To judge soft tissue thickness at the planned implant site
35. Internal irrigation is used for implant surgery
- (a) To clear the operative field
 - (b) To cool the rotating bur so that the temperature in the bone does not increase
 - (c) So that bone can absorb the water
 - (d) Enhance bone cutting
36. Time taken for integration of implants in the maxilla is
- (a) 1 months
 - (b) 2 months
 - (c) 6 months
 - (d) 8 months
37. Absorbance of laser light in tissue depends on the
- (a) Rate of temperature rise of the target tissue
 - (b) Pulse duration of the laser radiation
 - (c) Energy density in the target tissue
 - (d) Wavelength of the laser being used
38. Dental clinical laser application may include all of the following except
- (a) Comparative colorimetric photometry
 - (b) Coagulation
 - (c) Soft tissue ablation
 - (d) Tooth tissue ablation
39. Which of the following statements is correct?
- (a) Er:YSGG lasers emit in the visible region of the electromagnetic spectrum
 - (b) Er:YAG emission wavelength coincides with the main absorption peak of water
 - (c) Er:YSGG lasers use a gas as a source of emission
 - (d) Er:YAG lasers are of the continuous wave type
40. A CO₂ continuous – wave laser used at 5W for 10 seconds has a peak power of
- (a) 0.5 W
 - (b) 5.0 W
 - (c) 50 W
 - (d) 500 W
41. A diode laser can be used in endodontics
- (a) To decontaminate
 - (b) To prepare the endodontic space
 - (c) To produce smear layer
 - (d) To open dentinal tubules
42. An Erbium laser in restorative dentistry
- (a) Is not suitable to prepare a cavity
 - (b) Doesn't remove the smear layer
 - (c) Its suitable to prepare only class V cavities
 - (d) It the ideal wavelength for cavity preparation

43. Which of the following is a defining characteristic of laser beams?
(a) Low fluence (b) Coherence
(c) High peak power (d) Divergence
44. Which of the following statements is true?
(a) Lasers ionize target tissue and deactivates cellular DNA replication
(b) Mechanical energy of the photon striking the target tissue reduces cellular size
(c) Lasers selectively remove inorganic cellular components through photo stimulation
(d) Thermal energy vaporizes the target tissue by rapidly boiling away inter and intra cellular fluid
45. A diode laser (980 nm) can be used for depigmentation
(a) Never (b) Yes
(c) Only with water (d) Only CO₂ can be used
46. Ablation of sub gingival calculus has been demonstrated with which of the following lasers?
(a) Er:YAG (b) CO₂
(c) XeCl excimer (d) Frequency – doubled Nd:YAG
47. A diode laser can be used for bleaching?
(a) Never (b) Yes, with a bleaching gel
(c) Only with 7 W of power (d) No, only CO₂ laser can be used
48. Laser power is expressed in
(a) Watts (W) (b) Joules (J)
(c) Hertz (Hz) (d) Nanometer (nm)
49. Which characteristic of a LA agent is responsible for its penetration into the nerve?
(a) Lipid solubility (b) Water solubility
(c) Its ionization (d) Its Ph scale
50. Increasing the concentration of LA from 2% to 5% would have:
(a) Rapid onset and prolonged action
(b) Onset would not be affected but action would be prolonged
(c) No change on action
(d) Rapid onset and duration not affected
51. The efficacy of benzocaine in inflamed area would be
(a) Decreased (b) Increased
(c) Not altered (d) Prolonged
52. The main barrier for diffusion of LA into the nerve is
(a) Epineurium (b) Perineurium
(c) Endoneurium (d) Neural membrane
53. The only local anaesthetics with vasoconstrictor properties is
(a) Cocaine (b) Procaine
(c) Benzocaine (d) Lidocaine
54. All of the local anaesthetics cross the placenta
(a) Except mepivacaine (b) Statement is true
(c) Statement is false (d) Except lignocaine

55. Local anaesthetics are excreted mainly by
(a) Lungs (b) Fecal route
(c) Kidneys (d) Uterus
56. The differentiating factor between LA toxicity and developing syncope would be
(a) CNS stimulation (b) CNS depression
(c) Pallor of skin (d) Light reflex
57. With overdose of local anaesthetics agent one would observe
(a) Hypertension (b) Hypotension
(c) No change in BP (d) Cardiac arrhythmias
58. The absolute contraindication for use of adrenaline in LA is
(a) Myocardial infarction, 3-6 months ago (b) Angina pectoris
(c) Hyperthyroidism (d) Pregnancy
59. A cartridge of LA contains 1:200,000 adrenaline, it indicates that there is
(a) 0.005 mg/ml of adrenaline (b) 0.065 mg/ml of adrenaline
(c) 0.00125 mg/ml of adrenaline (d) 0.02 mg/ml of adrenaline
60. Young's formula of calculating dose of the drug for the children
(a) $\text{Age} / \text{age} + 12 \times \text{adult dose}$ (b) $\text{Age} / 20 \times \text{adult dose}$
(c) $\text{Age} + 12 / \text{age} \times \text{adult dose}$ (d) $\text{Age} / 12 \times \text{adult dose} \times 20$
61. Tetracycline and erythromycin all is primarily
(a) Bactericidal
(b) Bacteriostatic
(c) Tetracycline is bacteriostatic and erythromycin is bactericidal
(d) Tetracycline is bactericidal and erythromycin is bacteriostatic
62. Penicillin and aminoglycosides are
(a) Bactericidal
(b) Bacteriostatic
(c) Penicillin is bactericidal and aminoglycosides are bacteriostatic
(d) Penicillin is bacteriostatic and aminoglycosides are bactericidal
63. Vitamin B and K deficiency can occur in man
(a) Only by decreased intake (b) By prolonged use of antibiotics
(c) By absence of intrinsic factor only (d) When duodenal surgery has been performed
64. Clavulanic acid is used
(a) Against gram negative organisms
(b) As an inhibitor of β -lactamases
(c) It is highly active against β -lactamases producing organisms
(d) For analgesia
65. Third generation cephalosporins are active against
(a) G -ive and G +ive organisms
(b) Mainly against G -ive organisms but not against pseudomonas
(c) Mainly against G -ive organisms including pseudomonas
(d) G -ive and anerobic organisms

66. A patient suffering from candidiasis should be given as first line therapy
(a) Nystatin (b) Griseofulvin
(c) Idoxuridine (d) Ketoconazole
67. Metronidazole is used for
(a) Aerobic G +ive infections (b) Anaerobic infections
(c) Amoebiasis (d) B & C
68. Drug of choice in status epilepticus
(a) Phenytoin (b) Valproic acid
(c) Carbamazepine (d) Diazepam
69. The drug of choice for a patient of acute myocardial infarction
(a) Morphine (b) Pethidine
(c) Ibuprofen (d) Acetylsalicylic acid
70. The drug atropine sulphate for pre-anaesthetic medication is useful because
(a) It decreases secretions in respiratory tract (b) It causes pupillary dilation
(c) It produces tachycardia (d) It is primarily antiemetic
71. What are opioid analgesics?
(a) Render a specific portion of the body insensitive to pain
(b) Render the full body of the patient insensitive to pain
(c) Render insensitive to pain by binding to opioid receptors
(d) Render a specific CNS of the body insensitive to pain
72. NSAIDs combat fever by inhibiting which prostaglandin?
(a) Prostaglandin E2 (b) Prostaglandin I2
(c) Prostaglandin D2 (d) Prostaglandin F2
73. NSAIDs increase the risk of CNS adverse effects when taken with which group of antibiotics?
(a) Macrolides (b) Penicillins
(c) Aminoglycosides (d) Quinolones
74. Which of the following is a selective COX – 2 inhibitor?
(a) Indomethacin (b) Meloxicam
(c) Etoricoxib (d) Mefenamic acid
75. NSAIDs with least anti-inflammatory action is
(a) Indomethacin (b) Paracetamol
(c) Ketorolac (d) Ibuprofen
76. There are two taps in a tank. One tap fills that tank in 10 hours and the other empties it in 8 hours. If both the taps are opened simultaneously, in how many hours will the tank be completely filled?
(a) 10 hours (b) 13 hours
(c) 18 hours (d) will never fill up completely
77. Antonym of the word 'favourable'
(a) Unequal (b) Opposite
(c) Unfavourable (d) Infavourable
78. When two walls of a square shaped room meet together, then the angle made by the walls will be
(a) 30° (b) 90°
(c) 100° (d) 105°

79. What will be the ratio of 90cm to 1.5m?

- (a) $\frac{3}{2}$ (b) $\frac{3}{5}$
(c) $\frac{3}{6}$ (d) $\frac{3}{8}$

80. The Yamuna River is smaller than Beas but longer than Satluj River. The Ganga River is longer than Beas River. Which is the shortest river?

- (a) Satluj River (b) Ganga River
(c) Beas River (d) Yamuna River

81. If the first day of the year is Friday, what will be the last day of that year?

- (a) Monday (b) Friday
(c) Sunday (d) Tuesday

82. Add

2ft. 3in.
28ft. 11 $\frac{1}{2}$ in.
17ft. 5 in.
4 $\frac{1}{2}$ in.

- (a) 49ft. (b) 48ft. 2in.
(c) 47ft. 24in. (d) 48ft.

83. $25 = ? \%$ of 125

- (a) $\frac{1}{5}$ (b) 5
(c) 20 (d) 31.25

84. $4/? = ?/100$ What one number can replace both question marks?

- (a) 1 (b) 20
(c) 25 (d) 200

85. Divide 2.25 by .75

- (a) .0003 (b) .03
(c) .3 (d) 3

Direction (Questions No. 86 - 89) : Examine the statements given below each question on the basis of whatever is given and asked in the question, and not in reference to your personal opinion or reality.

86. Kavita's percentage of marks was higher than Seema but lower than Lata.

Meena's percentage was higher than Rachna but lower than Seema.

Whose percentage is the highest?

- (a) Kavita (b) Seema
(c) Lata (d) Meena

87. Find a pair of statements from the below four, in which both the statements cannot be true simultaneously, but can both be false.

1. All men are intelligent. 2. Some men are not intelligent.
3. Some men are intelligent. 4. No man is intelligent.

- (a) 1 and 2 (b) 2 and 3
(c) 1 and 4 (d) 3 and 4

88. Assuming that the pens can be of only one colour, which is either yellow or green, which of the two statements from the above can be true at a time?

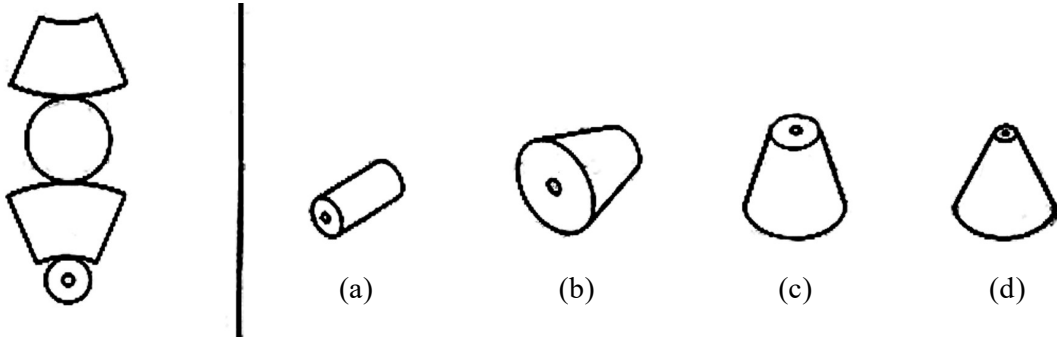
- | | |
|-------------------------|----------------------|
| 1. All pens are yellow. | 2. No pen is yellow. |
| 3. Some pens are green. | 4. No pen is green. |
| (a) 1 and 2 | (b) 2 and 3 |
| (c) 3 and 4 | (d) 1 and 4 |

89. Assuming that the pens can be of only one colour, which is either yellow or green, if statement 2 is false, which of the remaining statements will be proved true in indicating the colour of the pens?

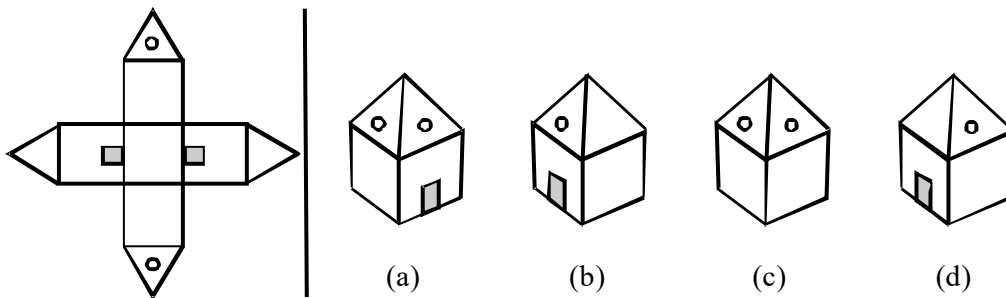
- | | |
|-------------------------|-----------------------|
| 1. All pens are yellow. | 2. No pen is yellow. |
| 3. Some pens are green. | 4. No pen is green. |
| (a) 1 | (b) 3 |
| (c) 4 | (d) none of the above |

Direction (Questions No. 90 - 93) : The next few questions consist of patterns which can be folded into figures. For each pattern, five figures are shown. You are to decide which of these figures can be made from the pattern shown. The pattern always shows the outside of the figure.

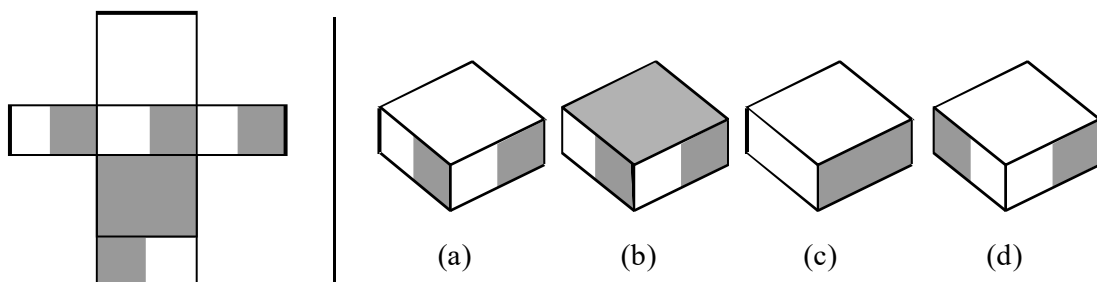
90.



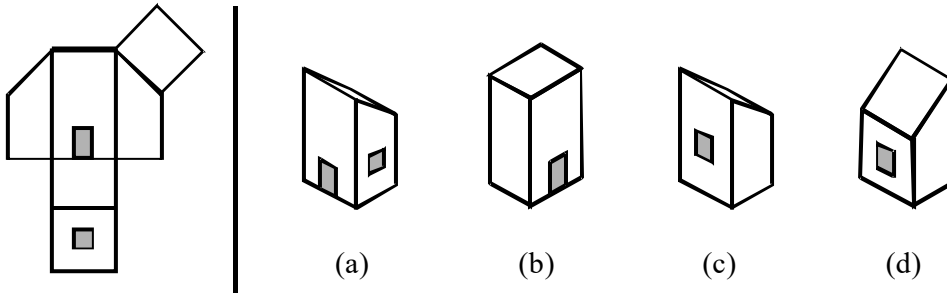
91.



92.

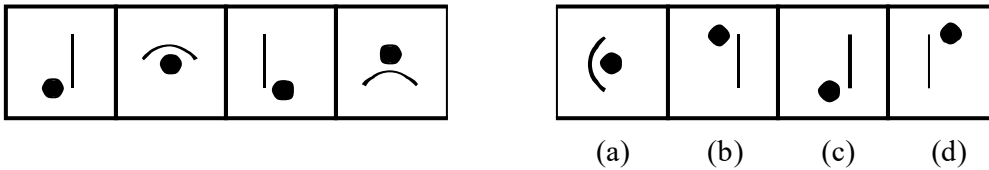


93.

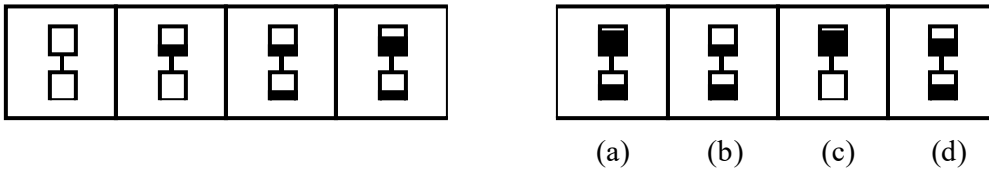


Direction (Questions No. 94 - 96) : In this test, you will see rows of designs or figures. The first row has four designs called **Problem figures**. These are followed by five designs called **Answer figures**. The four problem figures make a series, with the fifth figure missing. You have to choose the correct missing fifth figure for the Problem figures from among the Answer figures and mark it on your answer sheet.

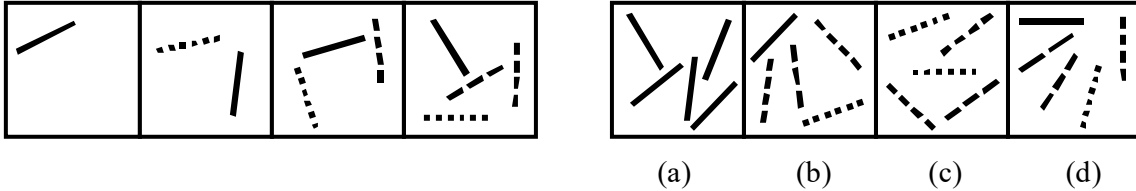
94.



95.



96.



Direction (Questions No. 97 - 100) : Choose the correct word which will fill the blanks so that the sentences will be true and sensible.

97. War is to pacifist as religion is to _____.

- (a) devout
- (b) sacred
- (c) atheist
- (d) minister

98. _____ is to land as knot is to sea.

- (a) desert
- (b) mile
- (c) acre
- (d) farm

99. _____ is to bird as shedding is to dog.

- (a) calling
- (b) flying
- (c) migrating
- (d) moulting

100. Coloured is to bleached as flushed is to _____.

- (a) blushed
- (b) drained
- (c) wan
- (d) truffle