UNIVERSITY OF BOLTON

FACULTY OF HEALTH AND WELLBEING

BSc (HONS) DENTAL TECHNOLOGY

SEMESTER TWO EXAMINATION 2023/2024

DENTAL TECHNOLOGY TECHNIQUES FOR FIXED PROSTHODONTICS

MODULE NO: DNT5103

Date: Friday 17 May 2024 **Time: 10.00 am – 12.00 noon**

INSTRUCTIONS TO CANDIDATES:

There are 13 questions on this paper.

Answer ALL questions.

There are a total of 100 marks available.

Marks for parts of questions are shown in brackets.

The pass mark is 40%.

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1. After the fitting of a crown, a patient returns to the surgery with the following complaints: food packing, unsightly black triangles between the proximal surfaces of the restoration and the adjacent teeth and inflamed gingival tissues. Utilise your knowledge of restoration design to identify the design issue present in this crown. Explain how this design issue has resulted in the patient's complaints.

4 marks

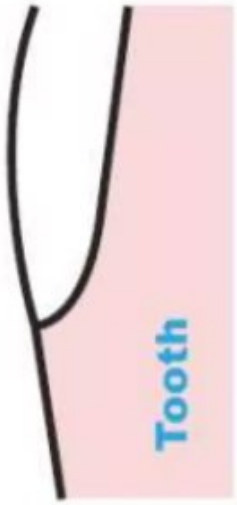
2. Suggest seven disadvantages of using implants in fixed prosthodontics.

7 marks

3. Tooth preparations

a) Study the image below. Identify the type of margin.

(1 mark)



(Shillingburg., et al 2012)

b) The process of tooth preparation by the clinician removes tooth tissue, with an aim to creating what three things?

(3 marks)

c) Why are shorter axial preparation walls less desirable than long walls?

(2 marks)

Total 6 marks

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4. A clinician plans to provide a long span bridge as part of a patient's restorative treatment. Multiple abutment teeth are prepared with a single path of insertion.

a) Identify the most appropriate bridge/connector design to use in this case.

(1 mark)

b) Outline six advantages associated with the ideal bridge/connector design for this case.

(6 marks)

c) Outline six disadvantages associated with this bridge/connector design.

(6 marks)

d) What complications may arise if connector dimensions are insufficient?

(2 marks)

e) What complications may arise if connector design results in connector dimensions being too large?

(3 marks)

f) List three factors that must be considered when selecting an alloy for bridge manufacture.

(3 marks)

g) Suggest three factors which affect retention of a bridge.

(3 marks)

Total 24 marks

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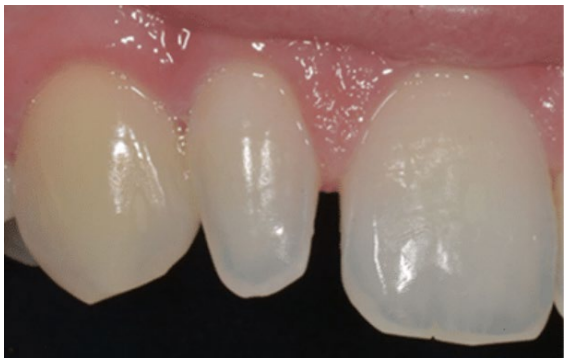
5. Why is sufficient bulk of material important in restoration design?

2 marks

6. Study the image below.



(Zafar et al., 2020)

a) A patient in their early 20's presents with peg-laterals, seeking a restorative solution to improve aesthetics of these teeth. The teeth and tissues are healthy and a class I occlusion present. Propose the most appropriate type of restoration to use in this case. Give a clear rationale for your answer.

(1 mark)

b) Suggest four aesthetic materials which may be used for this restoration.

(4 marks)

Total 5 marks

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7. Indirect Composite Restorations.

a) Indicate the two methods by which the bonding of composites to a metal substructure may be achieved. Also include mechanism of retention in your answer.

(4 marks)

b) A metal-substructure may be utilised to increase the strength of composites and allow their use in bridge provision. What alternative material/addition may be utilised to improve strength and allow use of composites in bridge-work?

(1 mark)

c) Briefly outline how indirect composites are polymerised and the potential associated issues.

(6 marks)

d) Suggest five advantages displayed by indirect composites.

(5 marks)

Total 16 marks

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8. Study the image below.

(Panorama Centre, n.d)

a) Identify the laboratory process that has taken place.

(1 mark)

b) Indicate how a Dental Technician will utilise this process in manufacture once it has been accepted by the clinician and patient?

(1 mark)

Total 2 marks

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9. Precision attachments. Study the image below.

(Cookson, 2020)

a) Identify the precision attachment.

(1 mark)

b) Suggest three advantages associated with this component.

(3 marks)

c) Suggest two disadvantages associated with this component.

(2 marks)

Total 6 marks

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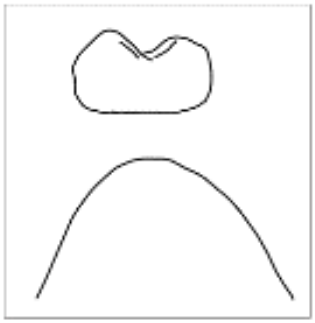
10. Pontic design is a key element of bridge design.

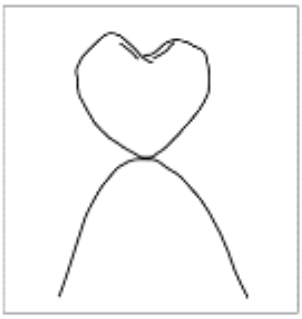
a) Identify the pontic design pictured below

(1 mark)



b) Identify the pontic design pictured below

(1 mark)



c) Which classification do the above two pontic designs (10a and 10b) fall into?

(1 mark)

d) Name a third pontic design which is part of the classification identified in 10c.

(1 mark)

e) For which teeth would the pontic designs in 10a, 10b and 10d normally be utilised?

(1 mark)

f) What disadvantage do the pontic designs an 10a, 10b and 10d share?

(1 mark)

Question 10 continued over the page…

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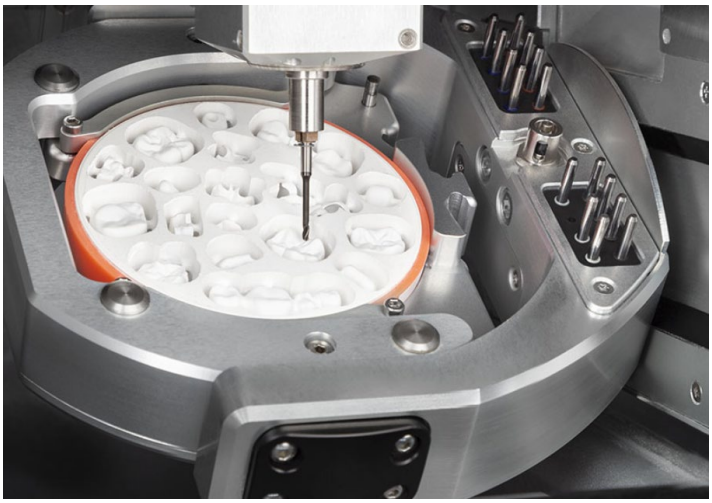
Question 10 continued

g) How can a pontic be designed to prevent ulceration and inflammation of the soft tissue?

(2 marks)

Total 8 marks

11. Computer-Aided-Design/Computer-Aided-Manufacture (CAD/CAM)
Study the image below.



(Schein, 2024)

a) Identify the method of Computer Aided Manufacture (CAM).

(1 mark)

b) Name an alternative method of Computer Aided Manufacture (CAM) used in fixed prosthodontics.

(1 mark)

c) State four advantages of Computer-Aided-Design/Computer-Aided-Manufacture (CAD/CAM) in fixed restoration provision.

(4 marks)

Total 6 marks

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12. When designing a framework or sub-structure for metal ceramic restorations, what seven factors should be considered?

7 marks

13. Study the image below presenting the palatal view of a composite inlay.

(Hosseini, 2016)

a) Identify the manufacture defect presented in the restoration.

(1 mark)

b) List six potential issues this defect may lead to.

(6 marks)

Total 7 marks

END OF QUESTIONS