



EXAMINATIONS COUNCIL OF ESWATINI
Junior Certificate Examinations

CONFIDENTIAL
November 2020

JUNIOR CERTIFICATE EXAMINATION

DESIGN AND TECHNOLOGY

537/02

MARK SCHEME

MAXIMUM MARK 100

COURSE WORK ASSESSMENT

THEME ANALYSIS	Level of Response	Marks
1.1.1 Candidates should demonstrate a clear understanding of the theme	<u>Theme definition</u>	1
<i>Candidates should be able to:</i>	- No definition 0 - Clear definition 1	
1.1.1.1 Provide a clear definition of the theme. (1)		2
1.1.1.2 One (1) to three (3) general areas related to the theme (1)	<u>Brainstorming</u>	
1.1.1.3 Four (4) or more general areas related to the theme. (1)	- No brainstorming 0 1-3 general areas 1 4 or more general areas 2	
1.1.1.4 Three (3) specific areas per general area. (1)		
1.1.1.5 Area of interest indicated (1)	<u>Area of interest</u>	
	- No/unclear specific area 0 3 x Clear specific area/gen. area 1 - Area of interest indicated 1	2
Total		5

SITUATION	Level of Response	Marks
1.2.1 Candidates should derive a situation from the theme.		
<i>Candidates should be able to:</i>	- No statement of the situation 0 - Any two (user, location, need) 1 - Clear statement of situation with all three elements (user, location, need) 2	2
1.2.1.1 Provide a clear description of a design situation from which a problem can be derived.		
1.2.1.2 Link the situation to the specific area of interest.		
Total		2

COURSE WORK ASSESSMENT

PROBLEM	Level of Response	Marks
1.3.1 Candidates should identify a problem from the situation.	- No/unclear statement of the problem 0 - Clear statement of the problem 1	1
<i>Candidates should be able to:</i>		
1.3.1.1 Provide a clear statement of the problem derived from the situation.		
Total		1

BRIEF	Level of Response	Marks
1.4.1 Candidates should formulate a design brief from the situation		
<i>Candidates should be able to:</i> 1.4.1.1 Provide a relevant and concise statement of intent. 1.4.1.2 Provide a clear brief that relates to the problem.	- No brief / preconceived / naming the product / irrelevant 0 - Any three of (location, user, intention, function and need) 4w's + H. 1 - All of (location, user, intention, function and need) 4w's + H. 2	2
Total		2

RESEARCH	Level of response	Marks
<i>Candidates should be able to:</i> 1.5.1 identify and list the constraints which influences proposed solutions 1.5.2 gather, order and assess information relevant to the solution of practical/technological problems 1.5.3 produce and/ or interpret data to carry out relevant research that will solve the identified problem	• 1 existing idea, analysed and evaluated 1 • 2 existing ideas (wide range), analysed and evaluated 2 • 3 existing ideas (wide range), analysed and evaluated 3 • 4 existing ideas (wide range), analysed and evaluated. 4 • Conclusion of research 1	5
Total		5

COURSE WORK ASSESSMENT – RESEARCH

SPECIFICATION	Level of Response	Marks
1.6.0 Candidates should formulate relevant specifications in order to guide design activity	No / unclear/ general specifications 1 specification	0 1
Candidates should be able to:	2 specifications	2
1.6.1.1 State clearly the function of the product.	3 specifications	3
1.6.1.2 State the properties of the materials.	4 specifications	4
1.6.1.3 Estimate and qualify size, capacity, quantity and weight of the product.	5 specifications	5
1.6.1.4 Estimate the cost of the product.	No function	1
1.6.1.5 Indicate possible structural considerations.	<i>Note: Specifications should be correct and qualified</i>	
1.6.1.6 State the safety requirements of the product.		
1.6.1.7 State the properties of the required finish		
1.6.1.8 Consider other factors related to the product. (e.g. Environmental factors, health & hygiene, handling & control, maintenance & appearance).		
	<u>Elements of the specification mentioned</u>	
	• Function • Properties of materials • Size • Cost • Structural considerations • Safety • Finish • Environmental factors • Health and hygiene • Handling and control • Maintenance • Appearance	
Total		5

COURSE WORK ASSESSMENT – EXPLORATION OF IDEAS

EXPLORATION OF IDEAS	Level of Response	Marks
1.7.0 Candidates should explore a variety of possible solutions to the given problem	<u>Initial ideas:</u> - No initial/ irrelevant ideas given 0 - At least 3 general different possible ideas illustrated 3 3 ideas of wide range with imaginative illustrations annotated 6	6
<i>Candidates should be able to:</i> 1.7.1 Sketch a variety of possible design solutions using pictorial representation. 1.7.2 Analyse each initial idea against brief and specification. 1.7.3 Propose how each idea will function. 1.7.4 Indicate possible materials for each design idea 1.7.5 Indicate possible methods of construction for each design idea. 1.7.6 Justify the chosen idea	<u>Evaluation</u> - Evaluation matrix – Filled table 5 - Key 1 - Chosen idea 1 - Justification 2	
Total		15

COURSE WORK ASSESSMENT – DEVELOPMENT

DEVELOPMENT	Level of Response	Marks
1.8.0 Candidates should show logical progression of all the aspects of the development	No development of chosen solution 0	6
Candidates should be able to:	Clear changes from initial idea	
1.8.1 Clearly display logical progression of the shape and form used.	1 change 1 1 appropriate change 2 1 appropriate change with justification 3	
1.8.2 Make informed decisions about the methods of construction.	2 or more appropriate changes with no justification 4	
1.8.3 Make informed decisions about materials to be used.	2 or more appropriate changes with one justification 5	
1.8.4 Indicate possible hazards of the product.	2 or more appropriate changes with justifications 6	
1.8.5 Suggest appropriate ways of minimising hazards.		5
1.8.6 Use ergonomics and anthropometrics data to determine the final sizes of the product.	Mock-up construction (2 pictures) 2	
1.8.7 Make informed decisions about finishes to be used.	Mock-up complete (1 pictures) 1	
1.8.8 Produce a presentation drawing of the developed solution.	Inappropriate testing (1 picture) 1	
1.8.9 Produce a mock-up (trialling and testing)	Appropriate testing (1 picture) 2	4
	Presentation Drawing	
	- Sketch with incomplete changes 1 - Sketch with complete changes 2 - Good quality sketch 3 - Rendering	
	1	
Total		15

COURSE WORK ASSESSMENT – PLANNING FOR PRODUCTION

PLANNING FOR PRODUCTION	Level of Response	Marks
1.8.1 Candidates should produce a working drawing	No working drawing 0	0
Candidates should be able to:	Working drawing (exploded views, orthographic projection and pictorial views, showing each component with dimensions)	
1. Present the developed solution in any suitable method.	Scale No scale 0	
2. Illustrate all the necessary details of the project	Correct scale 1	
3. Dimension the working drawing	Quality of lines Poor line quality 0	
4. Use scale(s) appropriately	Good line quality 1	
	Dimensions No dimensions 0	
	Correct dimensions 2	4
	Working drawing Not appropriate 0	
	Appropriate drawing 1	1
	Parts list/Cutting list 2	2
	Production plan Any two of (process, sketches, tools/equipment, estimated time) 1	
	Any three of (process, sketches, tools/equipment, estimated time) 2	3
	All of (process, sketches, tools/equipment, estimated time) 3	
Total		10

COURSEWORK ASSESSMENT – DESIGN REALISATION

MANUFACTURING SKILLS	Level of Response	Marks
2.3.0 Candidates should produce a quality product.	Range of skills displayed No skills 0 1 skill 1 2 skills 2 3 skills 3 4 skills 4 Appropriate use of 2 tools 2	6
<i>Candidates should be able to:</i>		
2.3.1 Display a range of skills	Standard of making skills Unacceptable 0 Low 1 Limited 2 Good 4 Proficient 6	6
2.3.2 Demonstrate good manufacturing skills		
2.3.3 Apply appropriate finishes	Construction methods All appropriate 1 Precision and accuracy Minor inaccuracies 1 Accurate and precise 2 Safety considerations Safety for the user 1 Safety for the machine/equipment 1	1
2.3.4 Observe all safety aspects of the product	Appearance Finish not well applied/done 0 Limited finishing skills (dents, scratches, blemishes) 1 Fairly done with some scratches/blemishes showing 2 Well prepared surfaces with negligible scratches/dents/blemishes but final finish not well done 3 Well prepared surfaces with negligible scratches/dents/blemishes but final finish well done 4 Well finished product 5 Use of materials Not economic and unsuitable 0 Economic 1 suitable 1	2

SUITABILITY	Level of Response	Marks
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2.1.1 Candidates should produce a product that suits its intended purpose.	Does not meet the requirements of the	0
<i>Candidates should be able to:</i>	brief/specifications	0
2.2.1.1 Produce a product that satisfies the brief	Meets the brief	1
2.2.1.2 Demonstrate appropriate use of materials	Meets one specification	1
2.2.1.3 Respond to technical aspects of the product	Meets two specifications	2
2.2.1.4 Produce a product in conformity to the working drawing (ISO)	Meets three specifications	3
2.2.1.5 Demonstrate sensitivity to the use of resources	Meets four specifications	4
	Meets five specifications	5
TOTAL		30

COURSEWORK ASSESSMENT – TESTING AND EVALUATION

EVALUATION	Level of Response	Marks
2.3.1 Candidates should appraise their product in line with the brief and specification	No evaluation/irrelevant Reference to design brief	0
<i>Candidates should be able to :</i>	No reference made Reference made	0 1
2.3.1.1 Test their products in order to assess whether they meet the brief and specifications	Reference to specifications No reference made Reference made to 1-2 specifications Reference made to 3 specifications	0 1 2
2.3.1.2 Provide a critical analysis of the product highlighting its strengths and weaknesses.	Reference made to 4 specifications Reference made to 5 specifications	3 4
2.3.1.3 Comment on possible modifications and future improvements.	Evidence of testing No evidence of testing/superficial testing Some testing done Testing done with objectivity	0 1 2
2.3.1.4 Outline personal and general limitations in designing and making the product.	Modifications No acknowledgement made Acknowledgement made Improvements None suggested Some suggested Some suggested and explained	0 1 2
Total		10