

## Domestic BER Examination – Specimen Paper September 2011

No	Question	Answer A	Answer B	Answer C	Answer D	Answer
<b>BER in Ireland, Overall Energy Performance and Advisory Reports</b>						
1	In which of the following cases is a Building Energy Rating required?	A standalone dwelling with a total useful floor area of 45m <sup>2</sup> offered to let	An extension to an existing dwelling	A standalone dwelling with a total useful floor area of 65m <sup>2</sup> offered to let	Both Answer A and C are true	C
2	The Building Energy Rating of a dwelling is measured in what units?	kWh/m <sup>2</sup> /year	kg CO <sub>2</sub> /m <sup>2</sup> /year	kWh	kWh/year	A
3	Table C1 of the Building Regulations Technical Guidance Document (2008) Part L is used to define a notional reference dwelling. With regard to this reference dwelling, which of the following statements is correct?	There are 3 extract fans for dwellings with floor area greater than 100 m <sup>2</sup>	The reference dwelling has the same number of extract fans as the actual dwelling	There are 2 extract fan for dwellings with floor area less than 100 m <sup>2</sup>	Answer A and C are correct	D
4	SEAI requires as mandatory that a BER Assessor or a BER Assessor's Principal takes out professional indemnity insurance.  What is the minimum limit for any one accident or claim?	€1,000,000	€1,300,000	€6,500,000	€13,000,000	B
5	Consider a detached house with the following specification:  <b>Fabric insulation:</b> average fabric U-value 0.30 W/m <sup>2</sup> K, <b>Windows:</b> double-glazed with low-emissivity coating <b>Air permeability:</b> 7 m <sup>3</sup> /(m <sup>2</sup> /hr) @ 50 Pa <b>Heating</b> 86% efficient gas-fired condensing boiler controlled by a programmer, room stat with boiler interlock and TRVs: no secondary heating <b>Ventilation:</b> Natural <b>Renewables:</b> None  What is the most likely BER grade?	B	D	E	F	A

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6	Failure to respond to a request from SEAI for a Data Review audit will result in how many penalty points applied to the Assessor?	0 points	1 point	2 points	3 points	B
7	With regard to the National Administration System (NAS), which of the following is <b>incorrect</b> :	The completed BER XML file is uploaded to the NAS database.	NAS creates the Advisory Report for the dwelling based on the data uploaded	Because NAS stores the xml file, the BER certificate and the Advisory Report for each BER, the Assessor doesn't have to store them	NAS provides an MPRN search facility for Assessors to validate a dwelling's MPRN	C
8	When would it be <b>inappropriate</b> to recommend that a solar water collector is installed?	In a dwelling where the only available space to install the panel is on a North-facing roof	In a dwelling with low actual occupancy patterns	In an ground floor apartment	All of the above	D
9	Which of the following refurbishment measures is likely to be the most cost effective?	Installing a lagging jacket on an uninsulated hot water store	External wall insulation on a wall with partial cavity insulation already installed	Replacing an open fire with a stove	Solar hot water systems	A
10	A room sealed wood pellet stove is to be installed as secondary heating in a house with a condensing gas-fired boiler that provides the main heating and hot water. There is no other secondary heating in place prior to the installation of the stove. No other changes are planned.  In DEAP what will be the likely effect on the delivered energy of the dwelling?	The delivered energy will be reduced	The delivered energy will increase	The delivered energy will stay the same	The delivered energy will change but from the information provided it is not possible to determine whether it will increase or not	B

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<b>Building Construction and Lighting</b>						
11	Examine Figure 1; what is the <b>most likely</b> wall structure?	Cavity Wall (block inner leaf, brick outer leaf)	Timber frame (brick cladding)	Solid brick wall	Stone	C
12	Examine Figure 2; what is the <b>most likely</b> age band of this dwelling?	B	C	D	G	D
13	Examine the section in Figure 3. What is the storey height of the second floor?	750 mm	2223 mm	2381 mm	2635 mm	B
14	In a 2-storey existing dwelling the following measurements are made:  Ground floor height (floor-to-ceiling): 2.6 m First floor height (floor-to-ceiling): 2.4m Intermediate floor depth: 0.3m.  What are the average storey heights of the dwelling?	Ground: 2.6 m 1st: 2.4 m	Ground: 2.9 m 1st: 2.4 m	Ground: 2.6 m 1st: 2.7 m	Ground: 2.9 m 1st: 2.7 m	C
15	What is the ground floor area in Figure 4? This is a new dwelling constructed in 2011.	35.9 m <sup>2</sup>	42.5 m <sup>2</sup>	40.2 m <sup>2</sup>	46.4 m <sup>2</sup>	D
16	A detached existing dwelling has a heated, habitable basement which is fully underground. Which of the following statements is correct in DEAP?	As it is fully underground the basement is excluded from the BER assessment	Heat loss through the basement walls is ignored	The basement walls are exposed and are entered in DEAP in the same way as exposed walls above ground	The basement walls are exposed and are entered in DEAP as part of the exposed basement floor	D

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17	What is the <b>most</b> appropriate action to take if a significant risk is identified during the course of a BER site survey that cannot be dealt with directly?	Continue with the survey but make a note to tell the occupant about it	Complete as much of the survey as possible without exposing yourself to any harm from the risk. Fill in any gaps in the data with default values	Complete the survey regardless	Stop the survey, inform the occupant, and return when the risk has been dealt with	D
18	When is a site survey required for a New -Final BER assessment of a dwelling?	Always, regardless of what information is provided by drawings and specification documents	Never - any gaps in data from the specifications document can be filled by default values	Only if the drawings and specifications do not provide all necessary data	It is at the discretion of the Assessor	A
19	During a BER Assessment survey you notice that the room ventilators installed in the dwelling (which each have 7500 mm <sup>2</sup> area) have been blocked with cling film.  What should you do?	Ignore the ventilators	Reduce the number of passive ventilators included in the DEAP Assessment	Include the ventilators in the assessment data and advise the occupants to remove the cling film in order to reduce the risk of condensation and mould	Advise the occupants also to block the extract ventilation fans with cling film, in order to reduce ventilation losses and heating costs	C

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20	<p>A 1-bedroom apartment has the following lighting:</p> <p><b>Bedroom:</b> 1 fixed light with an incandescent bulb &amp; 1 plug-in lamp with CFL;  <b>Hall:</b> 2 fixed CFL;  <b>Bathroom:</b> 1 fixed incandescent bulb;  <b>Kitchen/Dining/Living room:</b> 4 fixed lights with CFL bulbs.</p> <p>What is the percentage of low-energy lighting in the apartment to the nearest whole number?</p>	50%	66%	75%	77%	C
<b>Building Fabric &amp; Ventilation</b>						
21	<p>A new dwelling has had an air pressurisation leakage test carried out according to IS EN 13829 by a party with the required accreditation giving an air permeability, <math>q_{50} = 10 \text{ (m}^3\text{/h) / m}^2</math>.</p> <p>What air permeability in ac/h is entered into DEAP?</p>	10	0.5	0.2	No air permeability test result is entered in DEAP	B
22	<p>A house has 1 open flue, 3 permanent background vents in bedrooms and 2 intermittent fans. In DEAP, what is the ventilation rate in <math>\text{m}^3\text{/h}</math> due to these openings?</p>	40	50	70	90	C
23	<p>In DEAP which of the following is a draught lobby?</p>	An enclosed area of $1.5 \text{ m}^2$ with 2 doors forming an airlock at the main entrance of a house	An enclosed area of $4 \text{ m}^2$ with 2 doors forming an airlock at the rear entrance (via the utility room) of a house	An enclosed, unheated corridor at the entrance to an apartment	Answers A and B are correct	C
24	<p>A survey of an existing dwelling records the windows to be: Wood, double-glazed (12mm gap), date-stamp 2006. No other information is available. Which of the following options is entered in DEAP for</p>	$3.1 \text{ W/m}^2\text{K}$	$2.9 \text{ W/m}^2\text{K}$	$1.8 \text{ W/m}^2\text{K}$	$2.2 \text{ W/m}^2\text{K}$	D

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	the window U value?					
25	Which of these is acceptable evidence of a non-default window U-value in DEAP?	The BER Assessor's experienced judgement	A U-value claimed by the manufacturer and referring to IS EN 12567-1	A U-value measured according to IS EN 12567-1 by an independent, accredited source	None of the above	C
26	A semi-detached hollow-block house built in 1958 has a cavity wall extension built in 1986. What is the default U-value in DEAP for the extension walls?	1.78 W/m <sup>2</sup> K	2.4 W/m <sup>2</sup> K	0.6 W/m <sup>2</sup> K	0.55 W/m <sup>2</sup> K	C
27	In DEAP, for an existing dwelling, the default U value for the floor of a habitable heated basement constructed in 1986, with an exposed perimeter to area ratio of 0.8 is?	0.86 W/m <sup>2</sup> K	0.62 W/m <sup>2</sup> K	0.42 W/m <sup>2</sup> K	0.36 W/m <sup>2</sup> K	B
28	What is the thermal resistance of 50 mm of mineral wool insulation ( $\lambda = 0.044$ W/mK)?	0.88 m <sup>2</sup> K/W	1.136 m <sup>2</sup> K/W	8.8 m <sup>2</sup> K/W	1136 m <sup>2</sup> K/W	B
29	Which source of internal heat gain is <b>not</b> included in the DEAP calculation?	Intermittent extract fans to individual rooms	Central heating pumps	Internal lighting	Fans in MVHR systems	A
30	Which of the following glazing types has the lowest transmittance of solar gains?	Double glazing (no coating)	Double glazed low E (hard coat)	Double glazed low E (soft coat)	Triple glazed low E (hard coat)	C
<b>Heating and Hot Water Systems – Part 1</b>						
31	A dwelling has a single wall-mounted gas-fired heating appliance and radiators but no hot water cylinder. When a hot water tap is opened the appliance fires. This indicates that the appliance is:	A condensing boiler	A combi boiler	A CPSU	An instant multi-point water heater	B
32	What is the default efficiency of an open fire with a back boiler used to heat the hot water store but not the radiators?	30%	50%	60%	65%	B

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33	In DEAP which of the following boiler types has the highest default seasonal efficiency?	A direct acting electric boiler	An oil condensing boiler	A gas condensing boiler with automatic ignition	An LPG range cooker boiler single burner with automatic ignition	A
34	The volume of daily hot water usage (in litres) for a dwelling in DEAP is calculated using the:	Volume of the dwelling	Floor area of the dwelling	Hot water store volume	Number of hot water taps	B
35	During a DEAP survey, under what circumstances should you enter supplementary electric water heating?	Whenever there is an electric immersion heater	When there is a gas-fired boiler providing heating and hot water (with independent time and temperature control) and an electric immersion heater	When there is a solid-fuel boiler providing heating and hot water and an electric immersion heater	All of the above	C
36	According to the DEAP convention, which rooms make up the Living area in Figure 5?	Lounge only	Lounge and hallway	Lounge, kitchen and hallway	Lounge and conservatory	A
37	An existing detached dwelling has the following structure:  a suspended timber ground floor, timber-frame external walls with brick outer leaf, timber-stud internal partitions with plasterboard finish?  What is the thermal mass category of the dwelling in DEAP?	Low	Medium-low	Medium	Medium-high	A

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38	<p>During a BER survey of a family house you notice that the central heating programmer is set to provide heat from 7 am to 11 pm every day and the thermostat is set at 23°C.</p> <p>How will this affect the BER of the dwelling?</p>	The BER improves	The BER gets worse	The BER stays the same	The BER changes but from the information provided it is not possible to determine whether it improves or worsens	C
39	In DEAP, time and temperature zone control requires:	One space heating circuit and one hot water circuit, with water flow in each circuit controlled by a dedicated motorised valve	Two or more space heating circuits and one hot water circuit, with water flow in each circuit controlled by a dedicated motorised valve	Two or more space heating circuits and two hot water circuits, with water flow in each circuit controlled by a dedicated motorised valve	Two or more space heating circuits and one hot water circuit, with water flow in each circuit controlled by a dedicated manual valve	B
40	Figure 6 shows which type of heating control?	A programmable room thermostat	A cylinder thermostat	A room thermostat	A boiler thermostat	C
<b>Heating and Hot Water Systems – Part 2</b>						
41	Which of the following sets of controls will give the <b>best</b> BER when fitted in identical dwellings with a condensing combi boiler serving radiators in two space heating zones:	A system controlled by TRVs, a time switch and a room thermostat	A system controlled by TRVs, two time switches and two room thermostats	A system controlled by TRVs, a time switch, a load compensator and a room thermostat	A system controlled by TRVs, two time switches, a weather compensator and two room thermostats	D

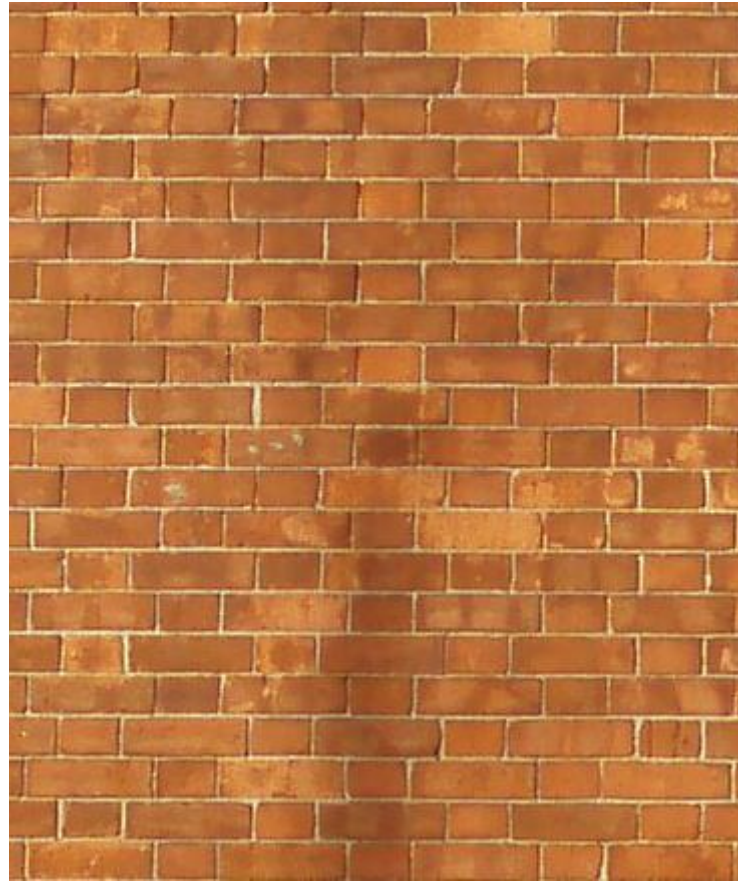
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42	In DEAP which fuel has the lowest emissions of CO <sub>2</sub> per kWh of energy delivered to the dwelling?	Electricity	Wood logs	Manufactured Smokeless Fuel	Peat briquettes	B
43	Boiler efficiencies in the HARP database are given in:	Net seasonal efficiency	Gross seasonal efficiency	European Standard Efficiencies	Full load efficiency	B
44	A house built in 1996 has the original oil boiler for which no efficiency details are available. There are 2 room thermostats and a cylinder thermostat which are wired for boiler interlock.  In DEAP, what is the Efficiency of the boiler (space heating), the Efficiency Adjustment and the Adjusted Efficiency (space heating)?	Efficiency: 65%  Efficiency Adjustment: 0.95  Adjusted Efficiency: 61.75%.	Efficiency: 70%  Efficiency Adjustment: 1.00  Adjusted Efficiency: 70%.	Efficiency: 79%  Efficiency Adjustment: 1.00  Adjusted Efficiency: 79%.	Efficiency: 83%  Efficiency Adjustment: 0.95  Adjusted Efficiency: 78.85%.	B
45	In DEAP assessments of existing houses with adequate main heating systems, which of the following statements is <b>true</b> ?	Secondary heating must always be included whether it is present or not	If secondary heating is included it must be electric room heaters	If secondary heating is included it must be fixed room heaters	If secondary heating is included it must be portable room heaters	C
46	In DEAP what is the Design Heat Loss below which a dwelling is considered to be adequately heated by room heaters in the main room only, without the need for secondary heating?	2.5 kW	3.0 kW	3.5 kW	4.0 kW	B
47	For a glazed, flat-plate solar panel, the gross collector area of the panel = 2 m <sup>2</sup> .  A dwelling being surveyed has two of these panels. What aperture area should be entered in DEAP in the absence of other information?	0 m <sup>2</sup>	2.88 m <sup>2</sup>	3.60 m <sup>2</sup>	4.00 m <sup>2</sup>	C

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48	What is the <b>preferred</b> source of data on the zero loss efficiency and heat loss coefficient of a solar collector?	The manufacturer's literature	The HARP database	The DEAP defaults	The manufacturer's website	B
49	In DEAP which of the following heating systems can be specified as a secondary space heating system in a dwelling that is part of a Group heating scheme?	Wood-pellet stove	Open fire	Direct acting electric heaters	All of the above	D
50	A photovoltaic cell (1.5 kWp) is on a south-facing roof of a new dwelling (pitch 30°) with very little overshadowing.  How much electricity does it produce per year in DEAP?	1289 kWh/year	1031 kWh/year	1611 kWh/year	1074 kWh/year	A

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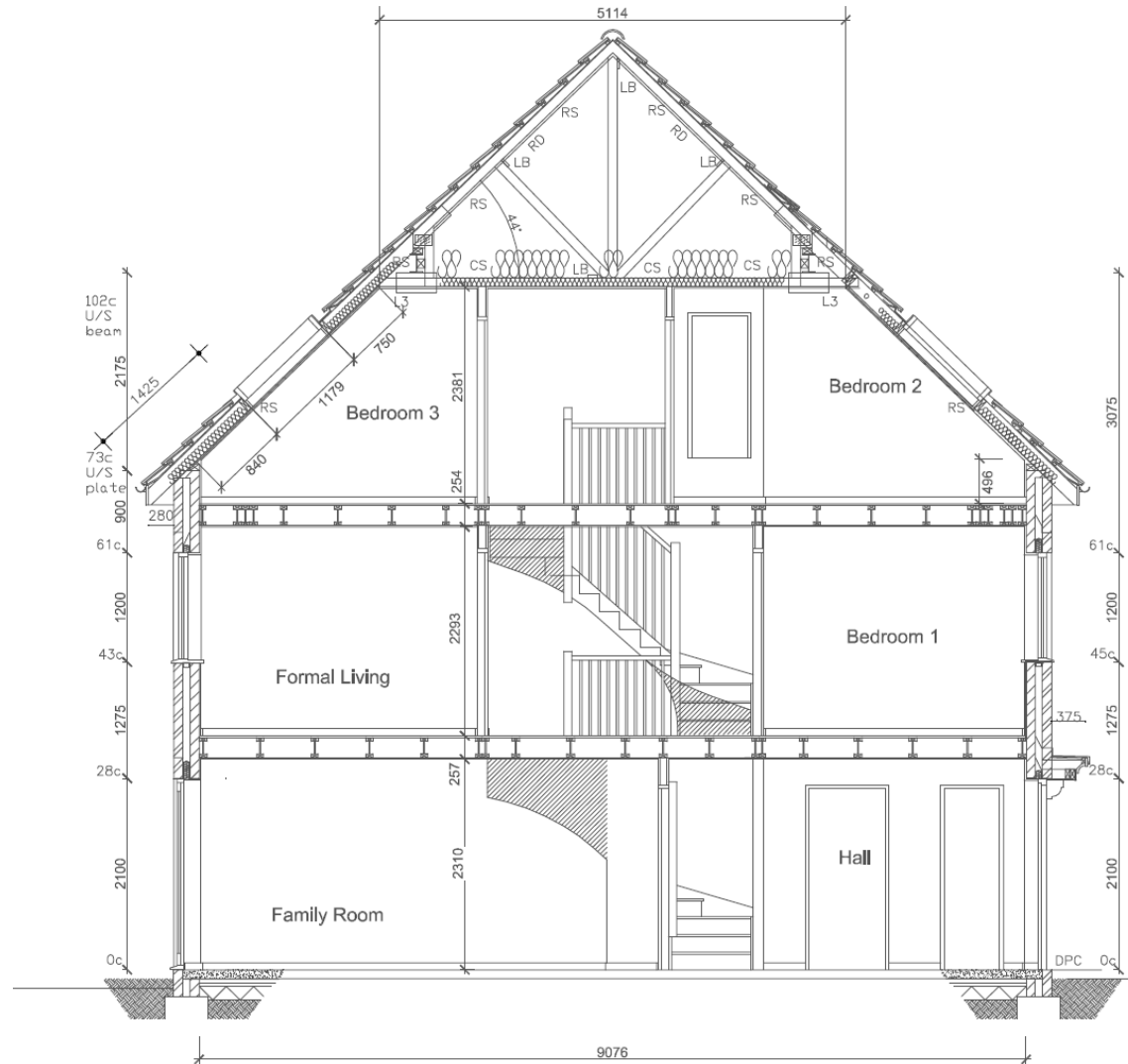
**Figure 1 – Question 11**

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**Figure 2 – Question 12**

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**Figure 3 - Question 13**

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Figure 4 – Ground floor, first floor & second floor plans of a dwelling – Question 15

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Figure 5 – Ground floor, first floor & second floor plans of a dwelling – Question 36



**Figure 6 – A Heating Control - Question 40**